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Garth Coward
Executive Editor
Cameron Young
Editor
Ken Seabrook
Art Director

T.M. Apsey
Deputy Minister of Forests
J.R. Cox
Director, Information Services Branch

Cover: The frost may or may not be on the pumpkin this time of year, but it definitely has left it's mark on an abandoned pile of dogwood leaves photographed by Bob Herger of Photo Graphics.

FEATURES

3 **Chilcotin Roundup** — Raising cattle on the Chilcotin Plateau isn't just a job, it's a whole way of life. *by Doug Colwell*

12 **ForesTalk Interviews** Don Lanskail of COFI — In these tough economic times Lanskail battles to save B.C.'s lumber markets. *by Peter Grant*

14 **The Landscaped Forest** (Lookin' Good) — Square cutblocks or round hills? Not if they're where they can be seen. *by Grant Ellis and Pieter Bekker*

22 **The Aspen Grove** — Welcome to the world where the season changes with flair. photo essay *by Gary and Judy Green*

26 **The Great Herbicide Debate** — We use herbicides so the conifers can grow free. But at what cost? *by Dee Kennedy, Patti Willis, Cameron Young*

DEPARTMENTS

9 **People:** The Sopron People — Twenty-five years ago they fled totalitarianism in Hungary. B.C. has benefited ever since. *by Gordon Price*

32 **Forest Habitat:** How Plants Travel — Considering plants are rooted to the ground, how do their offspring ever leave home? *by Enid K. Lennox*

20 **Collections** — From the mystery of leaves changing colour to the man who loved swans, there's more to the woods than meets the axe.

10 **Letters**

When the forest industry is down, the effects are felt in every household in the province. The main cause for this economic downturn is the high interest rates which have greatly reduced housing starts worldwide. These are homes that would have been built with B.C. lumber. Looking ahead, there is good reason to expect that interest rates will drop, housing starts will increase, and B.C.'s economy will improve. In the meantime we will all have to tighten our belts, and ForesTalk is no exception. In the next year ForesTalk will convert from a quarterly to a semi-annual publication. Although the magazine will appear less frequently, it will continue to inform readers on a wide variety of forest-related topics.

Hon. Tom Waterland,
Minister of Forests

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CHILCOTIN ROUNDUP

Mike Rossette of Gang Ranch

By Douglas Cowell

Angry grey storm clouds pour in over the Coast Range, silently smothering the Chilcotin country. The golden leaves and blue picture-postcard skies of September are long past; sticky, wet snow washes away the quiet greys, greens and browns of pine forests and dry grass.

Suddenly, crashing and bawling, a half dozen whitefaced cattle come lunging wild-eyed through the pines. Behind and overtaking them, a cow-hand in yellow raingear spurs his horse through the brush. With thundering grace the horse and rider gallop past, cutting off the Herefords' bid to spend a winter on the range. Yapping and darting, a silver-grey cow dog keeps the cattle moving. As quickly as it appeared, the procession vanishes through the grey-green curtain of tree trunks.

This is roundup time in the Chilcotin, the largest ranching area in British Columbia.

Three and a half million hectares of undulating, generally infertile glacial soil covered in lodgepole pine and willow swamps make up the Chilcotin Plateau. The eastern boundary is marked by rolling prairie and the Fraser River; the plateau's southern and western edges boast the alpine meadows of the Coast Range foothills; to the north are spruce swamps and miles of muskeg.

One main road, 400 kilometres of gut-wrenching gravel, stretches westward from Williams Lake to Bella Coola. There are a few side roads, an abundance of lakes and rivers, and a handful of settlements that are more outposts than towns: Alexis Creek, Chilanko Forks, Tatla Lake, Anahim Lake. The plateau shelters large populations of black bear, moose, deer, wolves and coyotes, and feeds more than 25,000 cows. There are about two people for each of the Chilcotin's one thousand or so horses.

On this wet, cold day the riders from the C-1 Ranch in Alexis Creek are hunting down and driving out 280 head of reluctant, near-wild cattle that keep scattering and dodging, trying to hide out in the endless pine forest. They've got to be corralled before dark. By late afternoon four bunches of cattle, each being pushed along by a rider and a dog, straggle into the flats along a bushy, meandering river. The groups join forces and move at a trot to the holding corral three miles downstream, dogs dancing and barking at the cattle's hooves. For nearly a hundred years cattle have been driven down this valley to corrals that have stood there for almost as long.

Seventy-two-year-old Jimmie Ross, now too old to ride, has a fire waiting for the cowhands. Jimmie's son David crowds close to the fire to soak up some heat, dipping his white Stetson to keep the smoke out of his eyes. Roy Blatchford joins the circle after loading his saddle into the truck and stowing his Winchester carbine behind the back seat.

But the rider in the yellow raingear, rubber gloves and rubber boots hasn't dismounted yet and doesn't seem to be cold. This is Mary Ross, wife and mother of the other two Rosses, and chief rider for the C-1 Ranch. She's the one who follows the herd into the remote summer range and watches over them for months at a time, moving them before they start to overgraze an area, keeping an eye out for injuries or disease. She is 69, an Indian, and has been riding for the C-1 for 19 years. When asked how long she's been working cattle she says:

"Since I was old enough to ride. About 60 years."

Dieter Kellinghusen has been manager of the C-1 and its 1500 stock ever since German royalty bought the ranch 22 years ago. Like other ranchers in the Chilcotin, he has difficulty finding good cowboys — people with an intimate knowledge of cattle, horses and the wild rangelands mixed in with a willingness to live in the backcountry, sometimes for months at a time. "I've found that Indians make the best cowboys," he says. "They're the only ones who really know the bush and like that kind of life. And of the Indian cowboys I've hired, I've found that women are the best."

Ranchers in the Chilcotin straddle two worlds. One is the world of Winchesters and rawhide, campfires and

On this wet cold day Roy Blatchford** (opposite page) **and the rest of the riders from the C-1 Ranch in Alexis Creek have to corral 280 head of reluctant cattle by dark.** (top) **Seventy-two-year-old Jimmy Ross has a fire waiting for the cowhands, including Jimmy's son David in the yellow raingear. Wife and mother Mary Ross** (right) **is chief rider on the C-1 Ranch. Now over 69 years old, she has been a cowhand for a good 60 years.

"snooze" (Copenhagen chewing tobacco tucked into pearl-snapped shirt pockets). This is Mary Ross's world: defined by tradition, the land and the weather. But Dieter Kellinghusen's world is one of computerized resource-analysis programs and internationally determined bank rates. This is a world filled by market fluctuations, political maneuvering, government policy and technological innovation.

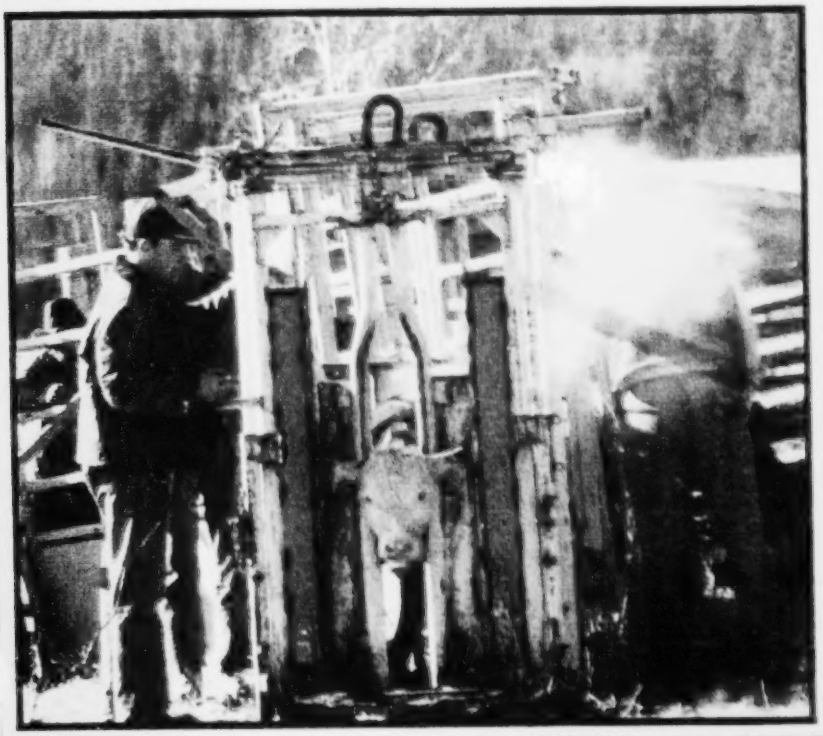
Ranches that 50 years ago would have employed 30 men are today, with the help of machinery, running with four or five. "My two biggest expenses are fuel and spare parts. I can't afford them but I can't operate without them," says Kellinghusen. "The most important man on the ranch is my mechanic."

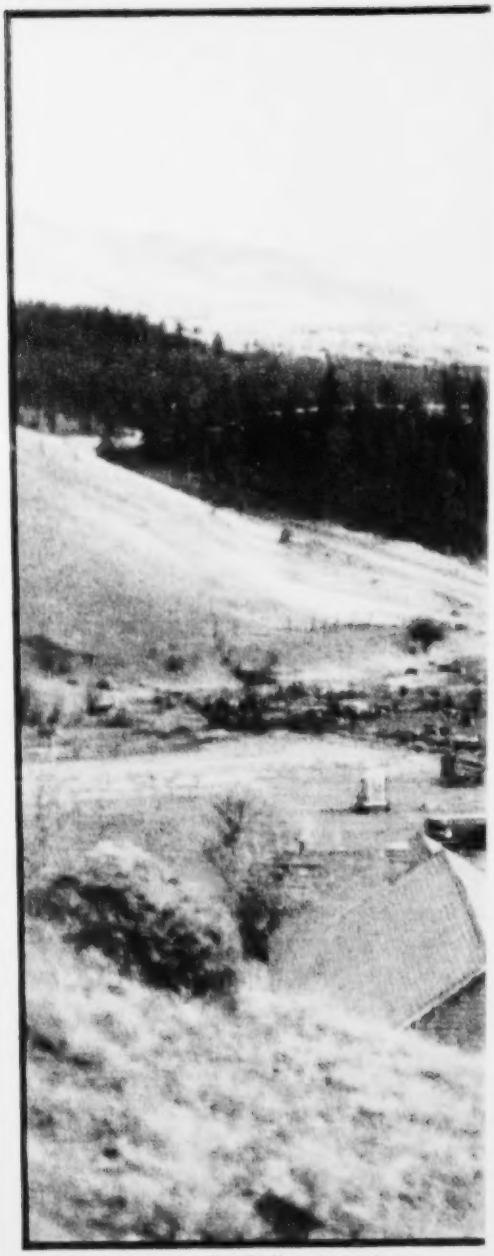
Dieter's ranch hands are hard at it separating out the cattle bound for market from the breeding herd. Calves to be kept over the winter are branded, tagged, innoculated and checked for disease, but branding time in the Chilcotin doesn't look like a scene from a familiar cowboy movie: there's no roping, no hog-tying and no campfire with a branding iron jammed into it. "Those ways are old-fashioned," Dieter says. "Being herded for miles and taken from their mothers is a stressful time for the calves; we don't want to add more stress by choking them with lariats or chasing them on horseback. We use an electric branding iron so we can be sure it's the right temperature and doesn't hurt them. It's just good business."

The first settlers began trickling into the Chilcotin in the 1860s when one Benny Franklin followed game trails into the unexplored country up the Chilcotin River. When gold was struck in the Cariboo in 1858 there was a sudden demand for beef, and ranches sprung up along the Fraser River. During the 1880s the CPR construction gangs needed beef and horses; later the Klondike gold rush and then the First World War kept the beef demand steady.

Although ranching is the primary industry on the Chilcotin, it's actually poor ranching country. Most of the land is covered in lodgepole pine, while the grass that grows under the trees is generally sparse and low in protein. Even at the best of times there's not a strong lumber market for Chilcotin lodgepole pine, especially because of the expensive road hauls to Williams Lake.

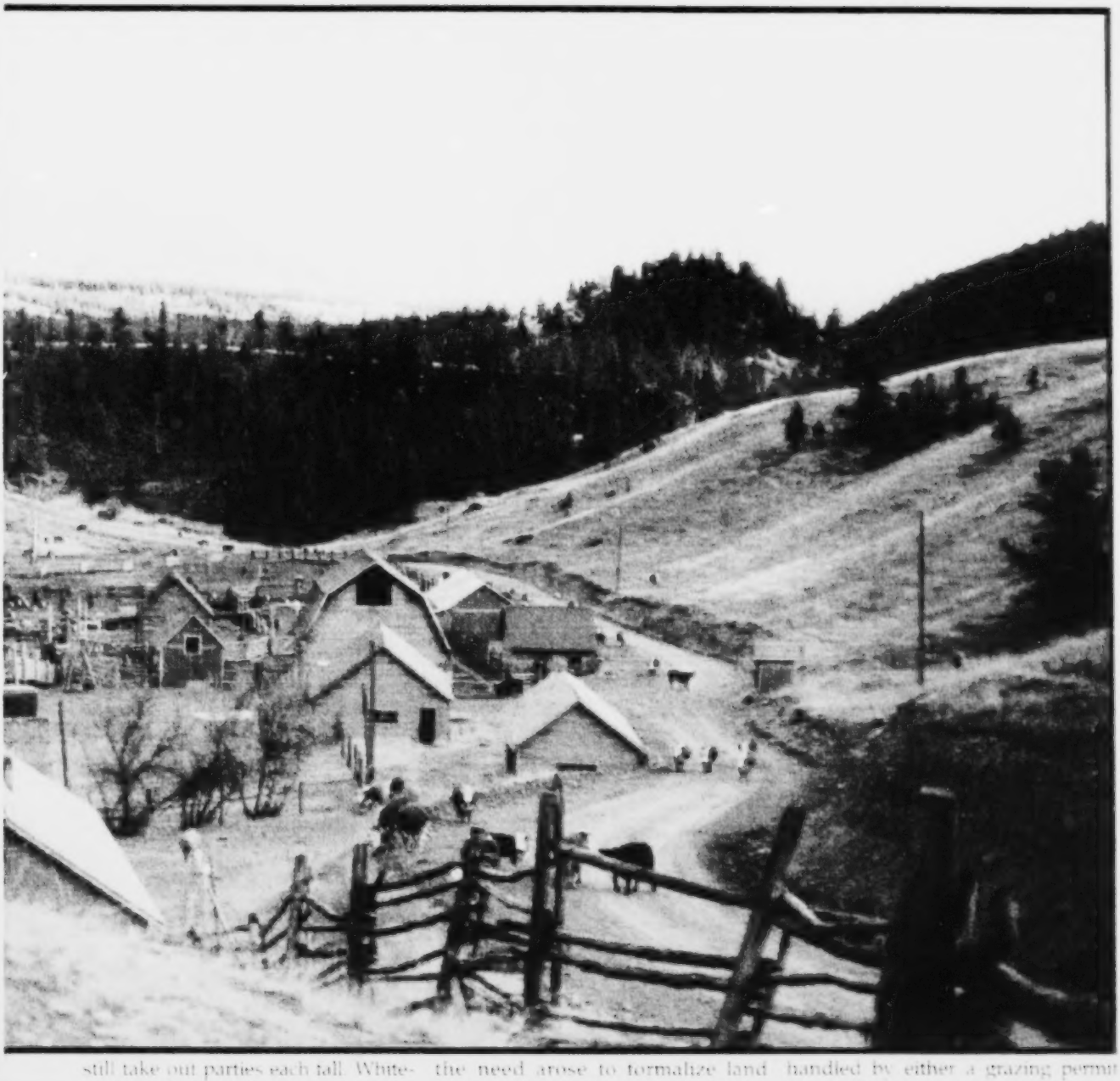
Over the years one Chilcotin industry that has been constant — although modest — is tourism. Several dude ranches and hunting camps operate there and a few hunting guides





***Branding time in the Chilcotin isn't like a scene from a cowboy movie with branding irons jammed into a camp fire. "Those ways are old-fashioned," says C-I manager Dieter Kellinghusen** (left, holding iron). "We use an electric branding iron so we can be sure it's the right temperature and doesn't hurt them."*

*(above) **Although ranching is the primary industry in the Chilcotin, the area is actually poor ranching country. Some ranches, like this abandoned homestead used temporarily for holding cattle, just couldn't make a go of it.***



still take out parties each fall. Whitewater rafting and canoeing on the Chilcotin River is gaining popularity, and every summer tourists come just to explore the backroads and enjoy the fishing. But the Chilcotin is a large place and is left pretty well to the cattle.

Because much of the good grazing is on boggy meadows and creek bottoms, in the early days ranchers found they needed large areas to raise relatively few cattle. And they simply made use of whatever land they needed. Later, when the need arose to formalize land tenures, the Grazing Act under the Forest Act of 1919 gave responsibility for managing Crown grazing land to the B.C. Forest Service. A three-tiered land-tenure system has since developed that involves ownership, grazing leases and grazing permits.

Typically, today's rancher owns the land his buildings are on, as well as some nearby hayfields and key pastures. Other key land, such as additional hayfields, high-productivity pastures and grazing land, is leased from the Crown. Finally, a rancher's Crown land grazing privileges are handled by either a grazing permit (one to five years), or a grazing licence (ten years). Use of Crown land is calculated according to Animal Unit Months (AUMs). If a rancher grazes 500 cattle on Crown range for eight months, for example, he pays for 4000 AUMs.

To prevent overgrazing of some areas and underutilization of others, the forest ministry regulates the number of cattle a rancher can graze on a particular piece of Crown land and for how long, as well as making various other land-management suggestions. Predictably, the rugged and

independent type of person it takes to make a go of ranching in the Chilcotin sometimes finds it hard taking direction from "bureaucrats."

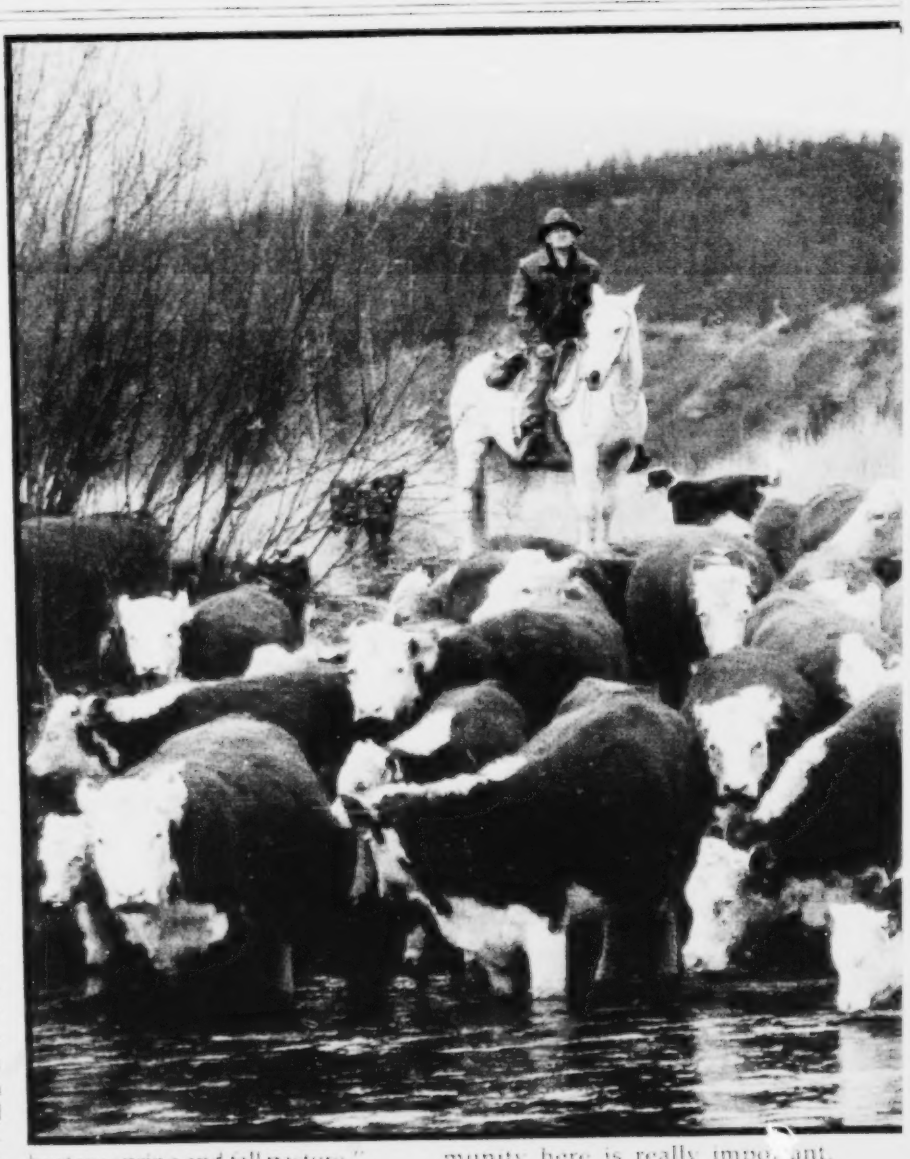
Tim Bayliff, president of the B.C. Cattlemen's Association, is the son of an early pioneer and a rancher near Redstone. He remembers the early cattlemen's meetings. "The Forest Service used to sit on one side of the table and the cattlemen on the other, and everyone would disagree with each other on everything."

Lyle Resh, range officer for the forest ministry in Williams Lake, sympathizes with ranchers who have to deal with government red tape and regulations. "It helps to be able to climb onto a horse and spend a day riding a guy's range with him and seeing his problems. That's where to work out differences. But you've got to be able to speak his language and know which end of a cow to feed."

Resh, along with ministry agrologists and technicians, are generally well respected these days. Two reasons for this are ARDSA and Coordinated Resource Management Planning (CRMP).

ARDSA, which stands for Agricultural Rural Development Subsidiary Agreement, is a cost-sharing agreement between the federal Department of Regional Economic Expansion (DREE) and the provincial agriculture ministry. Its aim is to increase agricultural production. Tom Redl is the ARDSA coordinator for the Cariboo Region, which includes the Chilcotin. He explains: "We work with CRMPs, where a group of ranchers in a particular area get together and approach the forest ministry's agrologist. Then they sit down with other ranchers, loggers, Fish and Wildlife people, recreationists — and any other resource users — to work out an overall plan for the area. When the plan is approved by Victoria, we go ahead and issue work contracts. Through ARDSA we build fences, roads, and cattle access trails. We improve water sources, work on brush encroachment, and construct corrals and loading ramps. Once we had a workshop for the handicapped build 500 birdhouses to increase the bluebird population for grasshopper control.

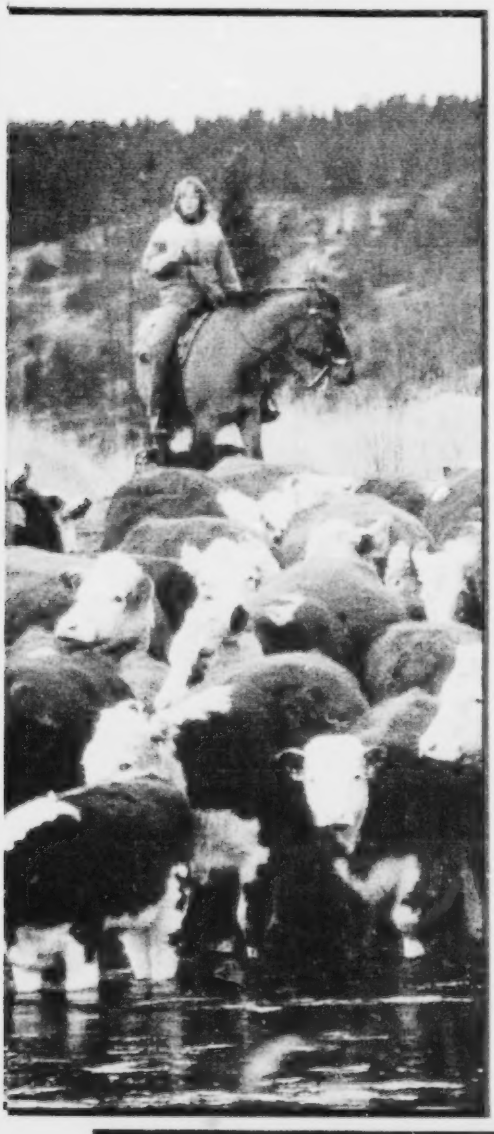
"Up at One-Eye Lake near Kleena Kleene there was a patch of old logging that wasn't growing back too well. So we cleared it, fenced it and planted grass. Now they have a 160-hectare spring and fall pasture."



The Lyman Thompson family owns one of the ranches using the new pasture. In the early morning Lyman, his wife Jeaneen, and daughters Mandy and Hattie ride out along the north side of the lake to bring a herd of cows and calves down to the home ranch for weaning. The riders operate as a team, flushing cattle out of willow thickets and rounding up stragglers. Pappy, who's 72, shows up in his jeep at noon with lunch. "There's ranchers here that never do any of their own riding," says Lyman, shaking his head. "But what's the use of having a ranch if you don't ride your own horses and get to know your land?"

Notes Jeaneen: "That sense of community here is really important. There's not many people around you learn pretty fast that you need each other. Take the Satres, for instance. Carol and Olaf both know a lot about veterinary medicine. The closest vet is 150 miles away, and we all know we can call on them in an emergency — say a cow is having trouble calving or a bear has torn up an animal. Sometimes they'll work all night to save it but they'll never ask for pay. We try to pay them back — do some welding or give them some preserves or something."

Olaf Satre, a civil engineer, bought a piece of raw bush in 1952 south of Tatla Lake that some people in the business said would never support cattle. "I've worked on this place for 25 years," says Olaf. "I've cleared and



Most B.C. ranchers graze their cattle on Crown rangeland, which is managed by the Ministry of Forests. Through a program called Coordinated Resource Management Planning (CRMP), groups of range users will get together to hammer out a land-use plan for their area. In the Kleena Kleene region, for example, the Lyman Thompson ranch has access to good fall pasture courtesy of CRMP. As is often the case in the Chilcotin, for Lyman** *(far left)*, **his daughters Hattie** *(left)* **and Mandy** *(below)*, **wife Jeaneen, and father "Pappy" Thompson** *(bottom)*, **ranching is very much a family affair.

planted, fenced and drained and blown miles of ditches. But you know, it never really seemed like work. It was always things I wanted to do, enjoyed doing.

"Anybody who comes here to get rich is a fool. In the time I've been here there's been only two years that ranchers have paid their bills, paid themselves a salary and turned a profit on their investment. People come here because they like the lifestyle and the country. It's not unusual for a family to move in and buy a ranch for half a million dollars, then spend the rest of their lives working in rubber boots and patched jeans."

The main cattle market for many Chilcotin ranchers is the cattle auctions held at the Williams Lake Stockyards. If there are lots of cattle buyers and if the price is up, they don't do too badly. If luck is against them it means another trip to the banker.

Today the cattle are being led singly or in small groups into the auction ring and paraded around. In the bleachers at the back of the ring, 50 to 60 ranchers and cowboys sit in judgement. While a few of the locals make the occasional purchase to bolster their herds, the real action comes from two cattle buyers pulled up to the edge of the ring. Armed with orders from slaughter houses, packing plants and feedlot operators, they rock back and forth on metal stacking chairs, calmly shuffling pages spread out in front of them, referring to notebooks jammed into pockets, and fiddling with bits of paper fished from their jackets. As the auctioneer croons away in his rapid-fire sing-song, they make their bids with a raised eyebrow, a minimal nod, an almost imperceptible shrug. Helplessly, but with a studied cowboy casualness, the cattle owner watches his year's work go by.

One hundred kilometres southwest of the stockyards, at Big Meadow in the heart of the Gang Ranch, the roundup goes on. The Gang Ranch, with its 40 000 hectares of owned, leased or grazing land, is the largest ranch in North America — in area, at least. Throughout its history it has consistently captured the imagination of the public and the headlines of the press. In the past year some of those headlines recorded range management disagree-

ments between the ranch and the forest ministry.

At daybreak five Gang Ranch riders leave the Big Meadow cabin and ride off in five different directions. By early afternoon they converge on the corrals at the north end of the meadow, each pushing a herd. Soon 700 animals are plodding slowly around the main corral.

At one end, two chutes are opened and a pair of riders patiently begin separating the animals. Healthy, pregnant cows and their calves go in one chute and begin the trip down to winter pasture. The rest await cattle-liner trucks and a one-way ticket to the stockyard.

Mike Rossette, an Indian cowboy, picks out a cow coming toward him on the edge of the herd. The cow tries to go around him and finds herself cut off. She turns. He lunges. Behind them is Henry Ferguson, another Indian cowboy. He's close enough to pressure the cow but not close enough to spook her. Finally she spots the open chute and takes it. Bawling, her calf bolts behind her towards a hay-fed winter in sheltered valleys.

Cowboys stumble out of bed at first light at a Gang Ranch cowboy cabin** (top). **Henry Ferguson** (above) **is a ranch veteran, riding with the cattle year round.

Ferguson is a full-time Gang Ranch employee. All year he rides with the cattle but almost never stays at the home ranch, moving from range cabin to range cabin. In the summer he leads the herd south into the alpine meadows, where they fatten on alpine grasses and sedges and dodge the flies on windy ridges. He's the only rider allowed to go into the mountains alone with the cattle for weeks at a time. There aren't many cowboys like him.

Soon he'll follow them down to winter pasture. Throughout the cold months he'll help feed them and ride herd, looking for sick and injured animals. In March he'll help new calves into the world and protect them from coyotes, wolves or bears. Then the warming sun will return, the land will grow green, and the herds will move back into the Chilcotin high country.

Eagle Habitat Threatened?

The fierce-looking eagle on the cover, and the osprey and hawk photos featured in the article entitled "Forest Habitat: High-Tree Nesters" in the Summer issue of *ForesTalk* were fantastic. It is unfortunate that the article itself was misleading and one-sided, inconsistent with the usual *ForesTalk* policy of balanced reporting.

The most significant point is never made — raptors are in trouble in B.C. Their future is as uncertain as is the bald eagle's in the United States. They exist in larger numbers in B.C. for one main reason — their nesting habitat has not yet been disturbed by logging as much as in the U.S.

The Americans in S.E. Alaska have extensively researched eagle habitat needs. The recommendations arising from these studies complement the data recently collected by the Nuu-chah-nulth (Nootka) on the west coast of Vancouver Island. Interestingly, although Meares Island near Tofino is the subject of an "intensive" Forest Service involvement process, neither the Forest Service, the Wildlife Branch nor the logging companies involved were willing to conduct an eagle nest survey. It was the local Indians who supplied the $800 needed for the work. The results showed both a much higher density of nesting sites than casual observation had revealed, and that the eagles used the well-formed, "overmature" yet living, highly merchantable trees, some of them up to 200 yards from shore.

The current B.C. policy of leaving uncut lone eagle nest trees ("when spotted") and a few adjacent "non-merchantable" trees for the future use of the eagles is totally inadequate. The lone trees often blow down or are abandoned, and the leave trees which are not of high quality are simply not suitable for the eagles. If we don't leave an adequate coastal fringe of old growth trees, eagles will disappear. In the 75-year rotational forests proposed for B.C.'s future, there are no tall trees and thus no room for eagles.

It is simply not good enough for the author of this article to state that the bald eagle seems to "fare much better in British Columbia" than in the lower 48 States. Exploring the reasons why the raptor is becoming extinct in the United States exposes a conflict with logging practices which must be further investigated and discussed.

Paul George, Director
Western Canada Wilderness Committee

Police Excuse Us

With reference to the article on forest unions in the Summer 1982 issue of *ForesTalk*, the policemen in the photographs were not RCMP, but B.C. Provincial Police.

Our old provincial force was ten years senior to the Dominion Police, organized the year following confederation and fifteen years senior to the RCMP.

LETTERS

The IWA strike in 1948 sounded the death knell of the Provincials. The B.C. coalition government was under the impression that the provincial police could not maintain order during big strikes and they disbanded them in 1950.

This was very unfortunate, since they were considered to be the finest provincial police force in Canada at the time.

Edmund Ball
Victoria, B.C.

In the Summer 1982 issue you refer to the RCMP but display a picture of B.C. Provincial Police. The picture on page 28 is that of former inspector Robert Owens of the B.C. Provincial Police.

As you know, the B.C. Provincial Police had its beginning 19-11-1858, 15 years before the formation of the North West Mounted Police, and maintained law and order in B.C. until 1950.

W.J. Thomson
Nanaimo, B.C.

ForesTalk wishes to thank the many readers who drew our attention to the fact that the police pictured in the article were not from the RCMP, but were members of the old B.C. Provincial Police force.

Wobblies Remembered

It was good to see reference to the IWW in an article by Ken Bernsohn, as those early unionists fought a long hard battle against terrible odds, for working people.

The letters IWW, incidentally, stand for *Industrial*, not *International*, Workers of the World.

The IWW publication, "Industrial Worker," was put out in Chicago well into the 1960's and may be published still, for all I know.

A short history of "The Wobblies" by Patrick Renshaw gives a picture of their various struggles to obtain better working conditions, safety regulations, better food and living quarters, shorter hours, and free speech; and the appalling and brutal tactics used against them by the industrialists who pretty well controlled the police and often had their own police forces.

When Big Bill Hayward spoke in Victoria, not long after the formation of the IWW, about 1905, my father was the Chairman of his meeting.

Two of the more active and prominent women in the IWW were "Mother" Mary Jones and Elizabeth Gurley Flynn.

Eve Smith
South Pender Island, B.C.

From Kimberley to Kathmandu

Hi! If I have time on my return, I'll try for some Nepalese afforestation photography and get some more details on it for a Collections item for *ForesTalk*.

Patrick Morrow
Everest Sheraton Hotel
Kathmandu, Nepal

ForesTalk joins the rest of Canada in saluting Pat Morrow for being the second Canadian to scale Mt. Everest (October 6, 1982). Pat, whose home town is Kimberley, B.C., has been contributing photography to ForesTalk for years. He is probably best remembered by ForesTalk readers for his Winter 1979 cover story on horse-loggers.

To Pat, who always acts like he's on top of the world, our congratulations. (And never let it be said that ForesTalk doesn't have friends in high places.)

Letters to the editor provide an opportunity for our readers to discuss topics arising out of ForesTalk. Letters for publication must carry the sender's name and address. Views published are not necessarily endorsed editorially. ForesTalk reserves the right to edit for publication.

REVISED PUBLICATION SCHEDULE

This, the Fall 1982 issue of *ForesTalk*, will be the last issue of *ForesTalk* to appear this year. There will be no Winter 1982 publication. The next issue of *ForesTalk* will appear in the Spring of 1983 and will be followed by two more issues that year. This cutback in *ForesTalk*'s quarterly publication schedule has been made necessary because of the difficult economic times our province currently faces.

ForesTalk Honoured

ForesTalk is the top magazine produced by any government, business, or industry in Canada, according to the Canadian wing of the International Association of Business Communicators (IABC) which selected *ForesTalk* as the winner of its 1982 Silver Leaf Award in a competition involving Canada's most highly-rated organizational publications.

This is the third honour of the year for *ForesTalk*. Earlier the magazine received an Honourable Mention in the Canadian Public Relations Society Awards of Excellence program and was given a special letter of commendation by IABC in its world-wide Gold Quill awards competition.

Don Lanskail

of the Council of Forest Industries

by **Peter Grant**

The B.C. forest industry's strongest voice in conference and trade circles belongs to the Council of Forest Industries (COFI), a 22-year-old umbrella association that represents almost all the province's major companies, as well as scores of smaller firms. COFI promotes the cause of B.C. lumber around the world but it also speaks to B.C. government lawmakers and agencies and, in a softer voice, to the public. Many of COFI's staff of 120 also get involved in the day-to-day problems of the forest industry; a glance at COFI's annual report reveals dozens of on-going projects in forest management, coordination, land use, logging, environmental impact, energy, economics, education, worker safety and transportation.

Don Lanskail, COFI's president and chief executive officer, has been "selling" the forest industry for many years. First a practising lawyer, he became the industry's chief labour negotiator, heading Forest Industrial Relations Ltd. and the Pulp and Paper Industrial Relations Bureau. During his 28 years as a spokesman for the industry, Lanskail has also served for 20 years as an alderman in his home community of West Vancouver — "one of my hobbies," he says.

In the past year Don Lanskail and the COFI staff have been coping with the fall-out from a severe economic slump and mounting a campaign to maintain the unrestricted flow of Canadian lumber to the United States, whose housing industry is B.C.'s biggest (although at present greatly reduced) market. While the forest industry endures troubled times, the affable Lanskail, a staunch guardian of the industry's image and influence in B.C., says he is "extremely bullish and optimistic" about its future.

FORESTALK: What does COFI do? Not many people are aware of its role in B.C.

LANSKAIL: Not even all our members are aware of the range of services we have. First of all, we are the principal trade association for the forest industry. We promote the acceptance of British Columbia lumber and plywood in Europe. We have offices in London, Paris, Rome, Aachen and Utrecht — and in Australia and Japan.

But our services include everything the industry wants to do on a cooperative or coordinated basis — with the exception of labour relations and direct selling. We have an economics department, and our economist looks after energy matters. One of our major activities in recent months has been appearing at energy commission hearings. We just got back a refund of $20 million for our members, from an increase in rates that B.C. Hydro imposed without legal authority.

FORESTALK: Wasn't Hydro passing on water rights fees increases?

LANSKAIL: Right now the industry is in very tight economic circumstances, and we oppose vigorously any increase in costs.

To get back to your question, we also negotiate with the railways over changes for transportation of forest products. We have a professional forester, Tony Shebbeare, manager of our forestry department, who looks after environmental matters and negotiates with the B.C. Forest Service over a whole range of things involving stumpage appraisals, forest policy and so on.

"Housing starts are at their lowest since 1946. They're running at about 900,000 a year in the United States. The benchmark we use is one-and-a-half million in normal times. Anything over that means times are good; under that things get worse."

FORESTALK: Isn't that more commonly known as lobbying?

LANSKAIL: Oh yes, the term lobby is used quite appropriately. It's sometimes used in a pejorative sense, but we like to think of it as simply representing the interests of our membership to the government. And they welcome the opportunity of having a forum to talk to the industry on a collective basis.

FORESTALK: Did COFI play a part in the recent talks over lumber exports to the United States?

LANSKAIL: We played the lead role in that.

FORESTALK: What was involved?

LANSKAIL: Because of the depressed economic situation on both sides of the border, some of the smaller American operators in the Pacific Northwest got a lot of publicity in the press, lobbied their congressmen, and even arranged a meeting with President Reagan, to attract attention to what they perceived as unfair Canadian lumber competition.

FORESTALK: What's unfair about selling Canadian lumber in the United States?

LANSKAIL: Their allegations really centered on three points. The first was that our government was subsidizing Canadian operators by giving them cheap timber compared with the high prices logging operators have to pay in Washington and Oregon. But there are really two different systems: the British Columbia system is based on the appraised value of timber — the value of the tree at about the time it is cut. The American system starts off with an appraised value for the timber, but because of short supply of available timber and intense bidding for that timber, the prices they paid for the timber were two or three times the appraised value.

They also claimed that Canadian operators were getting a subsidy on transportation. Then there were allegations of unfair competition because Canadians were underpricing. There were various references to dumping.

FORESTALK: Where did this lobbying get the American operators?

LANSKAIL: The U.S. senate finance committee chairman, Sen. Packwood of Oregon, got the committee to pass a motion directing the International Trade Commission to conduct a four-month inquiry into the whole matter of Canadian lumber competition in the U.S. market, to see

whether there was any unfair advantage to one party or the other. The staff of the International Trade Commission gave us a laundry list of items they wanted facts on. We started with the principle that we would cooperate in every way with the commission. We mobilized our staff resources, used our lawyer in Washington, and put together all the material required for this inquiry. Then at a two-day hearing in Portland, Oregon last March, we had six witnesses from the industry appear.

FORESTALK: It sounds like quite a coordinated effort.

LANSKAIL: We were representing the entire Canadian lumber industry during the inquiry. For the first time in the history of the industry, every association, including the Quebec lumber manufacturers, was involved in the same effort. The Council showed the leadership and provided the staff input.

FORESTALK: How did it turn out?

LANSKAIL: When the report came out, we felt that it was a vindication of the Canadian position. The commission didn't find that Canadian lumber is being subsidized. They found no subsidy on transportation, and there was nothing to suggest dumping.

FORESTALK: What's next?

LANSKAIL: Phase two will involve diplomatic activity. We have to get the Canadian government involved. American operators may apply for countervailing duties; they may get some congressmen to introduce a bill to impose a quota or restriction on Canadian lumber, or a tariff.

FORESTALK: How seriously do you take the threat of tariff reprisals?

LANSKAIL: Very seriously. The threat is never going to go away until there's a recovery of the United States housing industry, so that the forest industry on both sides of the border can sell their products.

FORESTALK: This period is being called the worst time in the history of B.C.'s forest industry. Do you agree?

LANSKAIL: It's certainly the worst in my time. The old timers say it's the worst since the Depression.

FORESTALK: What are the indicators of this?

LANSKAIL: Housing starts are at their lowest since 1946. They're running at about 900,000 a year in the United States. The benchmark we use is one-and-a-half million in normal times. Anything over that means times are good; under that things get worse.

FORESTALK: How much has the slump eaten into lumber shipments?

LANSKAIL: They're running about 30 to 35 percent below the normal level of production.

FORESTALK: Why is our forest industry so geared to the U.S. housing market?

LANSKAIL: Good question. Simply because it's the biggest market available to us. It's right next door, and it's an English-speaking country.

We have recognized the peril of too-heavy reliance on the U.S., and for the last 12 years we have made great efforts to diversify. But in our lifetime the Americans will be our biggest market, simply because of geography.

FORESTALK: The big question, then, is how to lessen the impact of these swings in the market on B.C. communities and jobs.

LANSKAIL: It isn't easy. We're trying to develop new markets and new uses in the U.S. We're emphasizing the home improvement market, rather than new housing. More and more people are turning to do-it-yourself projects around the house — building new bedrooms and carports.

FORESTALK: How long will it take for markets to recover?

LANSKAIL: If you take an optimistic view, there's a possibility of modest recovery this year. There's a bill in the U.S. Senate which would drive down interest rates by four points for housing for middle and low-income people. That could result in three or four hundred thousand new housing starts. If you're a pessimist, we're talking about well into 1983.

"I don't want to speak with any disrespect to environmentalists or parks people or a whole host of other people who are trying to grab forestland, but if the process continues, the forestland base will shrink to the point where we won't be able to sustain a forest economy for the long-term future."

FORESTALK: What will be the effect of a prolonged slump?

LANSKAIL: Some firms will not be able to carry on.

FORESTALK: Past recessions have forced small companies into the arms of bigger ones. Is this happening now?

LANSKAIL: Not so far. One reason is the accommodating attitude of the banks. As long as the management of the industry is doing a good job, the banks say, "Okay, we'll go along with you." They recognize that the economic situation is beyond the control of the industry.

FORESTALK: Over the long term, the fortunes of the forest industry hinge on the province's timber supplies. How serious is the threat of timber shortages?

LANSKAIL: We see a real threat. But there's a big "if." If you develop an area without following through with a good program of forest management — renewal through planting and enhancement through thinning and fertilizing and so on — then we may be in for a total disaster. If on the other hand, the right kind of public investment is made, we can improve our harvest.

FORESTALK: You say a "public" investment. How much is the forest industry willing to ante up for forest management?

LANSKAIL: We get back to the problem of who owns the land. The landowner is responsible for reforestation. We pay for it through taxes and stumpage, and licencees must renew the forestland to the satisfaction of the landowner, but the prime forest management responsibility is the provincial government's.

FORESTALK: What scale of investment is required to increase the timber supply over the long term?

LANSKAIL: For one thing, there has to be an adequate program to look after the backlog of insufficiently restocked land — the results of past logging where renewal has not been done either by nature or properly by man. The Pearse commission estimated it to be 800,000 hectares, but revised estimates place it at between 1.2 million and 1.6 million hectares. Someone has got to tackle that.

FORESTALK: How can you pry the additional money out of the province's general revenue fund?

LANSKAIL: With great difficulty. It's a major job of — I'd say public relations, but that's too hackneyed an expression — a major job of convincing the public that the investment has to be made, even though the payoff is only going to be in 75 years.

FORESTALK: What will convince people of the wisdom of that?

LANSKAIL: The emphasis should be on using resources that have a continuing life. The social ethic that is developing is based on the recognition that the world is running out of resources. Oil hits home because everybody drives a car and knows that the price of gas is going up.

Another side of the same coin is in persuading people that we have to maintain the forestland base. I don't want to speak with any disrespect to environmentalists or parks people or a whole host of other people who are trying to grab forestland, but if the process continues, the forestland base will shrink to the point where we won't be able to sustain a forest economy for the long-term future.

FORESTALK: What's on your plate for the next while?

LANSKAIL: Survival. We hear from our own people that COFI has never been in better shape. That's going to be one thing that will help us survive this very difficult economic period.

We think the long-term outlook is very bright. That needs to be said, because one of our problems is to maintain the image of the industry as an attractive opportunity for a young person coming out of school. We want kids to look to the forest industry as a career. We need the timber base and we need the manufacturing facilities, but most of all we need skilled people. ✪

THE LANDSCAPED FOREST (LOOKIN' GOOD)

by Grant Ellis and Pieter Bekker

First there's the view of Burrard Inlet from the West Vancouver hills, followed by the fjord-like scenery of Howe Sound. Next come the hills, streams, and lakes surrounding Highway 99 as it rises through the Coast Range above Squamish. The road winds along the Cheakamus River past Daisy Lake, then makes a broad arc to the east. There, ahead, is Whistler Mountain. People come thousands of miles to enjoy the beauty of the area and to ski the towering mountain slopes. And there, on the face of the mountain, is equally famous west coast prime timber.

The timber rights have been sold; trees will be cut; the scenery will be disturbed. But forest landscape management will take into account the fact that Whistler's visitors don't want to gaze at an ugly hillside.

Forest landscape management offers a compromise solution to the problems of logging versus aesthetics. Anyone who has rounded a bend on a scenic woodland highway in winter and come face to face with a mountain-sized checkerboard laced with diagonal lines, all etched in snow against dark trees, can visualize what forest landscape management attempts to do. The impact of those hard-edged geometric shapes leaping out from the rounded hills, particularly at close range on steep slopes, could be softened by feathering the edges of the cutblocks and by shaping the cuts to blend with the hills.

Landscape management is a relatively recent arrival among forestry disciplines, and the Ministry of Forests forest landscape program is itself just becoming visible.

Following the new forest legislation of 1978, the forest ministry began increasing its emphasis on recreation management — including managing the scenic values of B.C.'s forest landscape. In 1978 the forest landscape program acquired identity and status when Pem van Heek was made landscape manager in the forest ministry's recreation management branch. The ministry is now in the process of appointing a landscape coordinator in each of its six regional offices; three are already in place.

Although van Heek cautions that "the program isn't very sophisticated yet," the available techniques, which involve specialized terminology, computer programs and assessment standards, seem complex enough. On top of that is the whole question of aesthetics, which deals with such subjective elements as philosophy of taste and perception of beauty. This makes landscape forestry as much an art as it is a science.

"It gets the greatest emphasis in areas where a number of people look at attractive scenery," says van Heek, who is largely responsible for the publication of the *Forest Landscape Handbook*, a comprehensive, full-colour text that presents techniques designed to soften the effects of logging activity upon scenic areas. In most cases it isn't possible to hide the visual effects of logging, but with a little extra planning the cut blocks can be blended in with the surrounding geography.

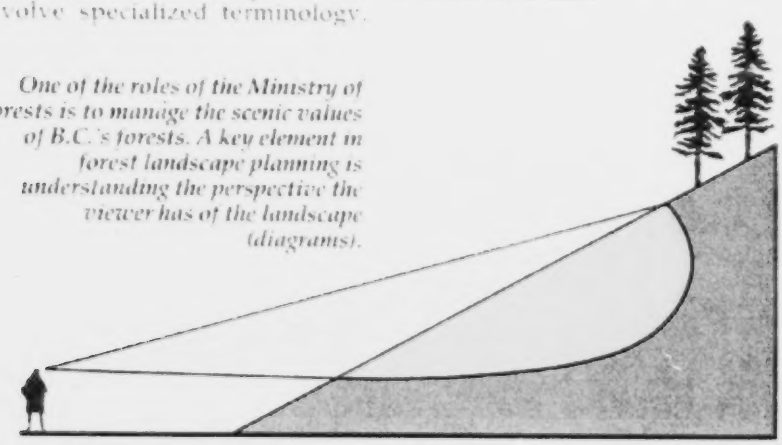
On October 16, 1980, eight men met on Highway 99 where it curves eastward toward Whistler. Included were municipal officials and a University of British Columbia forestry consultant; representatives of Pacific Forest Products; personnel from the Squamish forest district; and Ken Fairhurst, the ministry's landscape coordinator for the Vancouver forest region. The purpose of their meeting was to discuss the visual impact likely to result when Pacific Forest Products logs Blocks 45 and 46 on the western slope of Whistler Mountain.

"The municipal officials recognize the need for logging," says Fairhurst. "They are willing to accept visible changes, but in slow degrees. The company was cooperative. They had some staff members who were thinking about the aesthetics question when they designed the cut. They know the contours of the hill and the position of any natural boundaries."

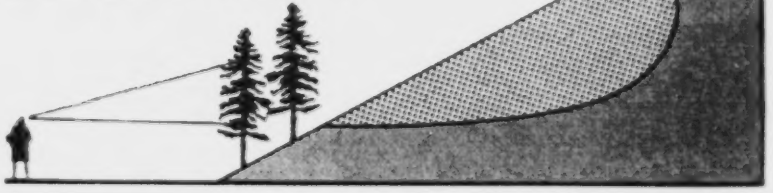
After the meeting, Fairhurst examined the visual aspects of the area Pacific Forest Products planned to log. He followed a structured, problem-solving technique whereby the terrain was analyzed and topographic data — the heights and contours of the land — were fed into a computer. Using programs adapted from the U.S. Forest Service, the computer simulated the appearance of the cut blocks as viewed from selective points along the highway. These drawings are being used to help prepare the landscaped look of the final cut plan.

One thing the landscape management program tries to do is rate the scenic values of the forest. If part of a landscape to be logged — say a prominent mountain — is visible from many viewpoints, it is classed as "visually sensitive." Other logged landscapes may not be nearly so scenically problematic. In between there are intermediate classifications. For the visually sensitive areas, forest management activity is assessed and, ideally, harmonized with the surrounding landscape.

"We rate areas for their VAC — visual absorption capability," says Fairhurst. "It's really an estimate of their ability to absorb changes with a minimum of visual disturbance. A gentle slope can tolerate more clear-cutting than a steep one. Distance



One of the roles of the Ministry of Forests is to manage the scenic values of B.C.'s forests. A key element in forest landscape planning is understanding the perspective the viewer has of the landscape (diagrams).



Softening the visual impact of logging is an especially important consideration in well-travelled scenic locations such as the Howe Sound and Whistler areas north of Vancouver (opposite page).

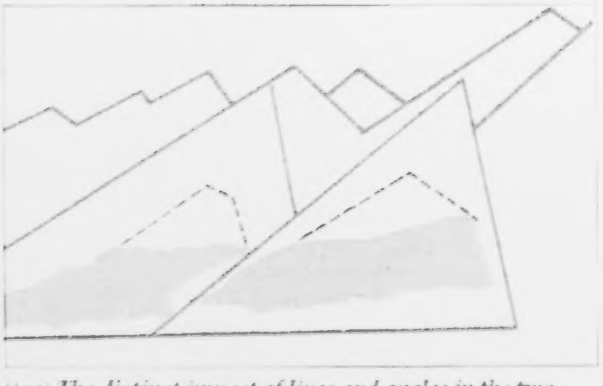
sottens the effect. Natural patterns of rock and vegetation make a difference. Basically, where there's more variety, the changes are less noticeable."

The ministry's aim is to apply these techniques province-wide, in areas where scenic enjoyment is important to residents and tourists alike. In each case, a landscape analysis is carried out to identify and measure the scenic values.

In 1972 a number of people in Port Alberni — a city almost totally reliant on the forest industry — expressed concern that logging by the city's prime employer, MacMillan Bloedel, might disturb the beauty of the Nahmint River Watershed. The Ministry of Forests responded with a study of the issue, and some of its recommendations were incorporated into the company's logging plans. This, together with the fact that MacMillan Bloedel still operates in the watershed, indicates that landscape concerns can be incorporated, in varying degrees, into commercial timber cutting plans. MacMillan Bloedel is now applying landscape management principles to its operations along the popular Tofino highway.

"On visually sensitive areas along the highway," says MacMillan Bloedel regional forester Norm Godfrey, "we're considering the use of a long-line yarding system. It lets us use a single road at the base of the mountain to get the same amount of wood that a series of roads would give us. We're willing to go to some expense to accommodate visual aesthetics." In a related development, MacMillan Bloedel and a number of other interested companies are experimenting with a dirigible known as a "cyclocrane" which they hope can be used to lift and move logs in areas where the environmental and visual effects of roads would be unacceptable.

Pem van Heek, who spends much of his time visiting forest managers throughout B.C. to brief them on the advantages of landscape



(top) The distinct impact of lines and angles in the two upper cutblocks dominate the otherwise attractive landscape of the Bulkley Valley. The visual impact could have been modified by shaping the cutblocks more along the lines of the natural landscape and by consciously avoiding sharp angles.

(middle) The horizontal shapes of the cutblocks in the Lussier River region in the Kootenays conflict with the triangular pattern of the mountain landscape. Sharp-angled, triangular-shaped cutblocks would have been preferable here.

(bottom) This logged area in the Fraser Valley presents a triangular shape that blends in with the existing landscape and is easy on the eye.

Probably the most contentious forest landscape issue in B.C. concerns the popular recreation area of Whistler (left; below), where representatives from the Whistler town council, the Ministry of Forests and Pacific Logging have struggled to settle on logging plans that will suit the needs of both the tourism and logging industries.

logging, stresses the point that "awareness and application of landscape management principles may demand some more planning time, but don't normally add to the costs of the actual logging operation. It's usually just a matter of common sense."

One common-sense approach to landscape logging is simply to practise good forestry in the first place. For example, quick and efficient reforesting of a logged area soon gives it a more pleasing, greened-up look. And carefully located logging roads that help minimize soil erosion on steep hillsides aren't likely to be an eyesore.

But while many forest landscape practices can be carried out with limited extra cost or delay to the forest industry, that's not always the case. The Whistler Mountain example, because of the great number of visitors attracted to the area year round, is perhaps the most visually sensitive logging site in the province. It has also become a thorn in the side of Pacific Forest Products chief forester Bruce Devitt.

"Suddenly, in the late 1970s, as a result of the landscape process needed to satisfy other resource needs, the land use in the Whistler area changed," notes Devitt, pointing out that the change meant his company had to greatly modify its logging plans for the area. "This change took place without notice, and without negotiations that recognized timber cutting rights established 70 years ago." His company has held up logging in the area for over two years while the Ministry of Forests has prepared comprehensive landscape plans. "The cost burden of supporting another resource through the landscape process needs to be recognized," says Devitt.

Pacific Forests Products chief engineer Buck Wilson feels the process is unfair. "What the municipal council objects to most are white forest openings in winter. If they're the result of a burn, the public tolerates them. If they're the result of logging, it doesn't. A field of wheat stubble in winter isn't pretty either, but it's nice again the following summer. Logging is the same — except that it takes years for an opening to green up enough to be hidden."

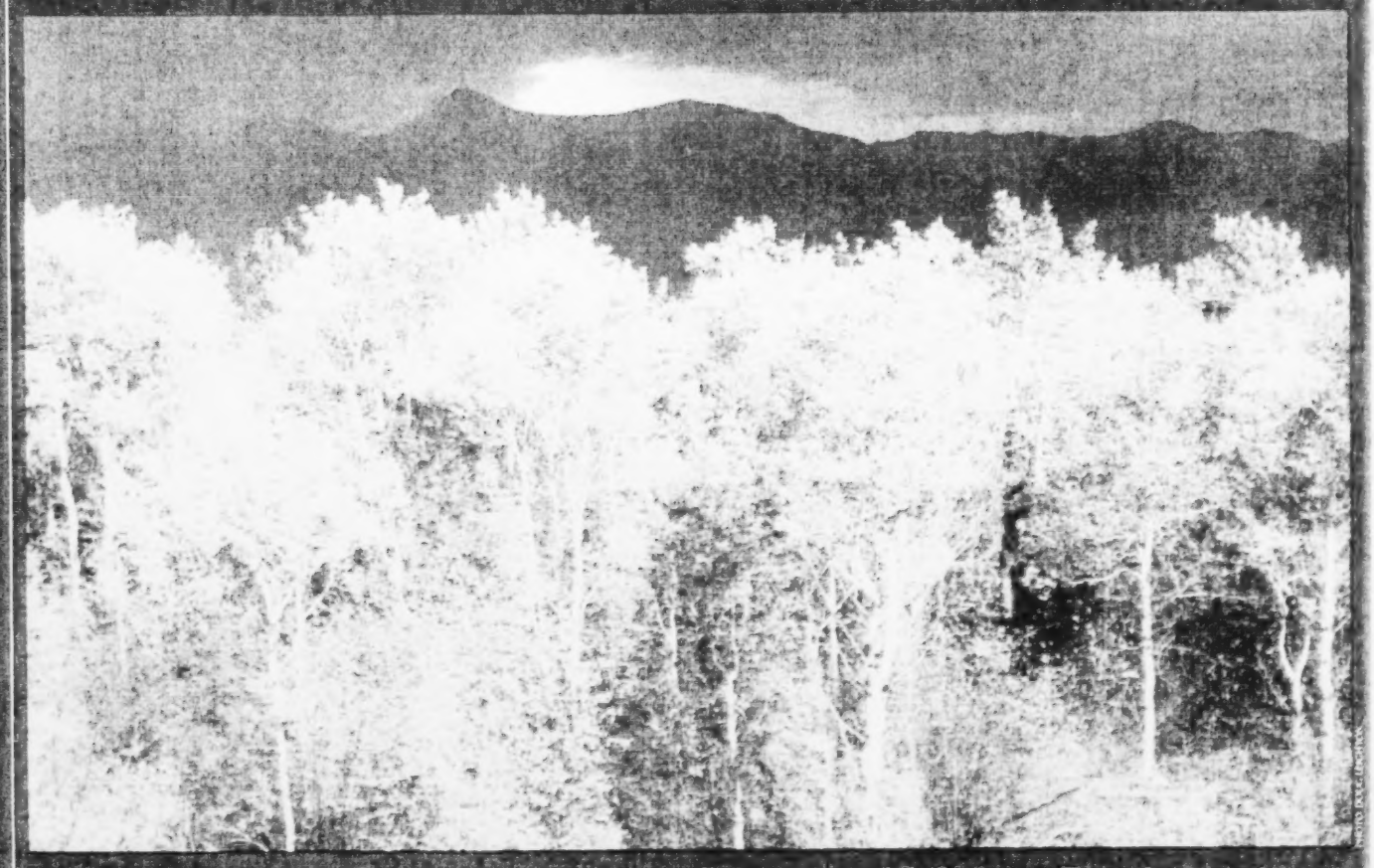
The company has indicated it would like to swap its timber rights for those in an area where there are few people and mediocre scenery. "We'd rather not be there," says Devitt who, while certainly a supporter of the principle of landscape logging, repeats, "The costs must be recognized and distributed fairly."

Robin Draper of the Outdoor Recreation Council of B.C. obviously would like to see B.C.'s scenic values preserved as much as possible. But for the moment he's taking a wait-and-see approach to the ministry's forest landscape program. "There are some good people in the program," he says. "They're trying. But things still happen that shouldn't — like that logging road that takes off from Spuzzum and goes up over the hill in the Hell's Gate-Boston Bar area of the Fraser Canyon. It's too early to tell if the over-all program is going to be effective."

Certainly the landscape management program is under scrutiny today, and its effect on logging in the Whistler area will be one indication of how effective it may become. (The area already sports one example of landscape management, just a short drive south along the highway in the view to the east toward Black Tusk, the upper boundary of a cutblock was lowered to make it less obtrusive.) In the meantime, there are other high-profile scenic areas situated in active logging areas in need of some attention. These include both MacMillan Bloedel's operation along the Port Alberni-Tofino highway, and Canadian Forest Products' operation on north Vancouver Island where the newly-completed last link in the Island highway bisects and exposes a major logging show.

Each area requires its own landscape solution, but the operating principle is the same: just as square pegs resist being stuffed into round holes, sharply-cornered cut blocks are ill-suited to the rolling contours of hills and valleys.

Promoting the very idea that logging can be done in more aesthetically pleasing ways is the main objective of the ministry's forest landscape program. Clearcuts can't normally be hidden, but neither do they have to be unremittingly ugly. In most cases the shape of the cut can be harmonized with the natural surroundings — to everyone's benefit.



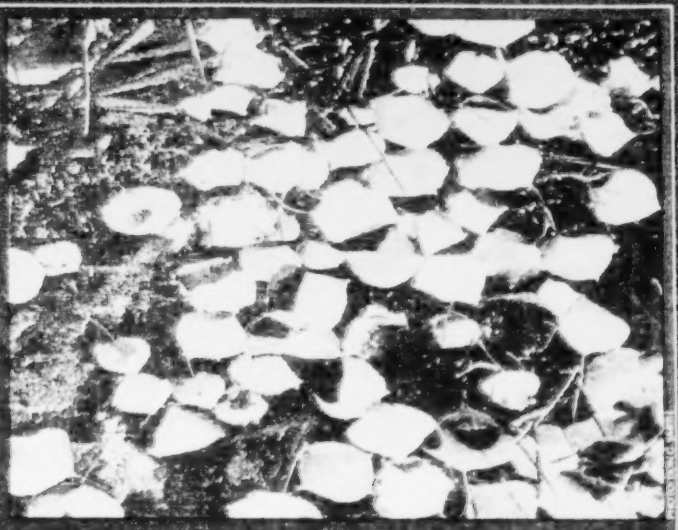
Mountain Gold:
The Trembling Aspen

by **Cary and Judy Green**

Early morning sunlight floods the valley bottom, highlighting groves of trembling aspen so recently transformed from the subtle green of summer to the vivid gold of autumn. Crystals of frost cling to the leaves of nearby shrubs that add their splashings of red to the mosaic of forest colour.

The predecessor to the aspen grove was a dark forest of evergreens that fell victim to the ravages of fire. Light-loving aspens were quick to replace the burnt-out trees.

A slight wind sets into motion the gentle rustling of the small, flattened leaves. This gentle melody of nature, wind and motion gives the trembling aspen its name.



Trembling aspen is a member of the poplar family and is found throughout B.C. east of the Coast Mountains.

Aspen groves are a place of refuge for members of the deer family. As the first dustings of snow cover the mountain peaks, elk and wapiti start their migration to the valley bottoms.

The stillness of morning is broken by the piercing bugle call of elk bulls as they gather together their harems of cows. The sound of cracking branches resonates through the grove as two bulls combat for supremacy of the harem. The female elk graze nearby quite unconcerned.

The grove provides ideal grazing habitat for the mule and whitetail deer who browse on the rich ground cover. Overhead, woodpeckers hammer the soft wood in search of wood-boring insects.

Autumn advances on the land with the aspen grove being carpeted by the falling leaves — mountain gold passing for another year.

COLLECTIONS

Ralph Edwards

BIG TREES

ForesTalk reader Randy Stoltmann alerted us to a Douglas fir tree at Red Creek near Port Rentrew on Vancouver Island which is "very likely the largest Douglas fir still standing in Canada and possibly exceeded in size only by the giant Queets fir in Olympic National Park, Washington."

The Red Creek fir measures 73.5 metres (241 feet) to its broken top and 4 metres (13 feet) in diameter at breast height. But surveys by Canadian Forest Products' staff in 1977 found a Douglas fir on Nimpkish Island near Alert Bay that towers 82.8 metres (276 feet). Legend has it there's a Sitka spruce tree in the Carmanah Creek drainage near Bamfield over 90 metres (300 feet) high — but no one has yet proven it. Any more nominees for the tallest tree in B.C.?

WOOD SPIRITS

Kwakiutl Dzoonokwa Mask

THE GREEN WALL OF CHINA

Planted in one-kilometre-wide strips along China's northwestern frontier is a belt of trees which protects precious farmland from the sands of the Gobi desert when the winter winds blow. Begun after the Communist revolution of 1949, the shelterbelt is creeping towards its ultimate length — 6,000 kilometres. A similar belt stretching along the country's southeastern coast breaks the force of the summer typhoons that blow more sand inland. These huge planting projects represent a massive commitment of manpower, but they're only a small part of the People's Republic's reforestation and afforestation program, easily the most ambitious in the world.

When the country's agriculture program swung into action with the formation of village communes and district production brigades in 1958, treeplanting became a duty for every able-bodied person. Organized planting has raised China's forest cover from less than nine percent to almost 13 percent of the country's area, reforesting almost the same area as British Columbia's total productive forestland.

The shelterbelts are an early stage in the struggle to reverse the effects of centuries of careless tree cutting and natural disaster. (Perhaps no area on earth has seen more deaths from periodic flash flooding and droughts than the crowded north Chinese river plains). The country's overall goal is to put 20 percent of its land in forests by the end of the century. That means planting trees on 70 million hectares.

Seeds Across the Ocean

With tree seed imported from B.C., barren landscapes of northern Europe have been transformed into productive forests.

Lodgepole pine, Sitka spruce and Douglas fir are the species favoured by Sweden, Great Britain, France and West Germany. In all, about 2,000 kilograms of conifer seed are shipped out of B.C. annually.

Along with the squirrels, cone collectors throughout the province are busy a few short weeks each fall, carefully removing ripened cones from prolific coniters. The harvested cones are shipped to one of B.C.'s four seed extraction plants, including the Ministry of Forests' facility in Duncan on Vancouver Island.

Unlike the squirrels, forest managers open cones by kiln-drying them. The cones are loaded onto trays and left for 24 hours at 40°C, just long enough for the bracts to shrink and spring open. The opened cones are tumbled in a wire-mesh cage, allowing the seed to fall into a collecting bin underneath. The seed is then tossed into a de-winger, which brushes off the wings and generally cleans it up. The seed is now ready for bagging, labelling and shipping overseas.

All exported tree seed is certified by the Canadian Forestry Service, which ensures accurate labelling of the seed and careful recording of where the seed was gathered. This allows foresters abroad to select and plant seed that is genetically suited to the environment they are reforesting.

And, in a few years a patch of Europe starts to take on some of the aspects of the wilds of British Columbia.

Colour Commentary

The splendour of fall's colours is the result of highly complex plant chemistry.

As the number of daylight hours diminish, a hormone forms in the leaves of deciduous trees, moving down the leaf-stem and causing a corky ring to form at its base. This ring builds up layer upon layer until the flow of sap to the leaf is cut off. Once this happens, chlorophyll, the food-manufacturing agent which gives a leaf its green colour, disappears. Now the other pigments in the leaf can be seen more easily.

The colour of the leaves can be affected by temperature, the soil, the amount of rainfall, and direct sunlight. There are also genetic reasons why some species of trees always turn the same colour, whereas others vary from year to year.

It is thought, too, that each tree has its own distinctive chemical formula for sap containing, for example, iron, magnesium, sodium or phosphorus in differing proportions. As the sap is withdrawn from the leaf, these minerals become more concentrated and can contribute to creating a variety of colours.

Before the leaves fall from a tree, preparations for spring are already complete. The cells that will form the new leaves, flowers, twigs and seeds are waiting within the bud. No growth will take place — so no food is needed — and the tree settles into a period of dormancy for several months. Only when spring brings on more hours of daylight does the whole spectacular cycle begin again.

THE GREAT HERBICIDE DEBATE

by Des Kennedy, Patti Willis, Cameron Young

Many British Columbians are worried by the use of chemical herbicides in the forest, but foresters say herbicides are essential silvicultural tools. The topic generates a wealth of informed opinion and much finger pointing — but few clear answers.

THE PROBLEM: THE WRONG KIND OF VEGETATION

"This is spruce country, some of the best spruce-growing country in the world," says Bill Dumont, Western Forest Products (WFP) divisional forester for northern Vancouver Island. Sprawling across Quatsino Sound and its three long-fingered inlets, WFP's Tree Farm Licence (TFL) 6 occupies 170,000 hectares of rugged terrain — mist-shrouded mountains braided with rushing streams, old forest of enormous Sitka spruce and spike-top cedar, shaggy hemlock and balsam.

But along cut-over valley bottoms and roadsides, wherever sunlight touches soil, other plant and tree species, primarily red alder and salmonberry, fight tenaciously for space. These are nature's shock troops, marching in to reclaim denuded areas. For Dumont and his fellow foresters they are weeds, constantly bedeviling human efforts to create a managed forest. Many deciduous trees are capable of prodigious growth — up to two metres in a season. After a conifer site is logged, unless new conifer seedlings are planted immediately and the deciduous growth held in check, the area has little chance of sprouting another generation of conifers. "The most frustrating thing about alder," says Dumont, "is that it occupies our best conifer sites; a problem," he admits, "of our own making." Currently, 1,500 hectares of TFL 6 are in pure deciduous growth, with another 930 hectares in mixed stands.

"We've decided," Bill Dumont says, "that ecologically, alder is acceptable on certain sites. We have to accept it in the streamside environment because it's important for fish-rearing habitat." In other areas, he goes on, "there are certain benefits to alder: it's a kind of tallow crop, it's a nitrogen fixer, it covers up bare areas, and it's an organic matter contributor. If we could only somehow mechanically control that alder, allow it to come in for two years, then switch to conifers — but we've had limited, in fact reverse, success with mechanical control."

Since the B.C. forest industry today has little commercial interest in alder, alder stands normally aren't included in an allowable annual cut (AAC), and Dumont estimates that the AAC on TFL 6 could be increased by 1.1 percent if conifers were to replace the alder currently growing there. That's worth about $2.8 million to the provincial gross domestic product. This year WFP will spend about a quarter of a million dollars on its "brush" problem. Most of that money, reimbursed by the government under Section 88 of the Forest Act, will be spent on trying to kill or suppress the deciduous growth with chemical herbicides.

HERBICIDES ARE ONE WAY TO FIGHT THE PROBLEM

"If we're going to carry out our mandate," says Bob Jones of the Ministry of Forests' silviculture branch, "we have to have a number of options, and one of them is to use chemicals." Some of the silvicultural activities that Jones says require the herbicide option include the preparation of newly logged areas for planting and the suppression of brush and weed growth to allow conifers to grow more vigorously.

In preparing a logged-over site for planting where the slopes are steep and the soil thin, "the best way to go," Jones says, may be to "give it a herbicide treatment that will control the brush temporarily. Then put in large-sized planting stock which can keep growing ahead of the brush." Similarly with brushing and weeding: "It's a procedure we've added to basic silvicultural practice — ensuring that not only is the forest reestablished, but also that it's in a tree-to-grow situation. Brushing and weeding, whether it's manual, chemical or by some other option, is considered basic forest management."

Facing reduced timber supplies in the future, the Ministry of Forests in its five-year plan calls for more work in reforesting the backlog of forestlands that have not regenerated adequately in the past. "There are," says Jones, "450,000 hectares of medium and high-quality land that are currently occupied by non-commercial brush. Rehabilitating some of these areas might be predicated upon the use of chemicals."

The five-year plan prescribes that one or more silvicultural practices be carried out on a total of 150,000 hectares annually by 1985-86. "I'm not saying [that] every one of those hectares has a chemical sign attached to it," Jones emphasizes. "But herbicides should be considered an integral option in forestry practices."

A report by the Council of Forest Industries (COFI), which represents most of B.C.'s major forest products companies, echoes the same viewpoint: "Pesticides (herbicides, insecticides and fungicides) represent one essential type of forest management tool, and offer a means by which overall forest production may be increased by a conservatively-estimated ten percent." And an industry facing reduced timber supplies feels the goal of a ten percent boost in production is worth pursuing.

> ***"Pesticides (herbicides, insecticides and fungicides) offer a means by which overall forest production can be increased by a conservatively-estimated ten percent." —***
>
> *B.C. Council of Forest Industries*

Spraying alder with Krenite near Hope, 1980.

IT ALL COMES BACK TO 2,4-D

The phenoxy herbicide 2,4-D, North America's most common pesticide, is used mainly to control weeds in cereal crops, pastures, rights-of-way and lawns. A selective chemical, it will kill many broad-leafed weeds without killing the surrounding grass or coniferous trees. In Canada's four western provinces, about 3.5 million kilograms of active ingredient of 2,4-D are applied annually, mostly to wheat, oats and barley. B.C. farmlands receive approximately 15,000 kilograms each year.

By comparison, in 1981, about 6,200

hectares of B.C.'s 52 million hectares of forests were under permit to be treated with approximately 15,500 kilograms of 2,4-D. In addition, about 35,000 kilograms of the herbicide Kremite were to be applied to 6500 hectares of forestland. According to an estimate made by COFI, the rate of herbicide use in B.C. forests can be expected to remain constant at around 10 to 20 thousand hectares annually.

Recently, Health and Welfare Canada requested that Kremite's manufacturer, DuPont, conduct animal feeding studies to determine the long-term effects on humans of chronic exposure to the chemical. Kremite's temporary registration for forestry use has expired, although its registration for use on rights-of-way remain valid.

"So we go back to environmentally less-desirable compounds like 2,4-D," says Ron Kobylnyk who, as director of the environment ministry's pesticide control branch, occupies the hotseat in pesticide controversies, "although Kremite is probably the best researched in terms of environmental impacts of any of the herbicides we have."

With the loss of Kremite, which had been used for helicopter spraying, chances are now good that 2,4-D will be applied from the air. But Dave Handley, manager of MacMillan Bloedel Designed Forest forestry operations, says: "If I was going to aerial spray, rather than introducing into the environment a chemical like 2,4-D that may not do the job, I would sooner run the gauntlet of using 2,4,5-T and at least achieve my silvicultural goal." Concerned over the toxic dioxin content of 2,4,5-T, the B.C. environment ministry has restricted its use. But it may still be used under a special permit.

HOW HERBICIDE USE IS REGULATED

B.C. is an unusual place," says pesticide control branch director Ron Kobylnyk. "You spray water out of a plane here," he says, "and you can get the entire province riled up." Kobylnyk's branch is responsible for all pesticide use in B.C., including administering a pesticide permit system for forestry. "Our whole aim in life is to balance the prudent use of pesticides for food and fibre production with environmental quality."

When a forester decides to use herbicides to beat back encroaching vegetation, an application is made to the pesticide control branch for a pesticide-use permit. Once the application is examined by a body called the B.C. Pesticide Control Committee, which is chaired by Kobylnyk and made up of representatives from various government agencies, a permit may be issued. It is then posted for public comment. If a member of the public objects to the permit, and if the chairman of the appeal board accepts the objection, a local public hearing is held by the Environmental Appeal Board. Based on the hearing, the board may accept, reject or modify the permit.

The actual registering of pesticides is done federally by the pesticides division of Agriculture Canada. (Ron Kobylnyk spent nine years in that division before becoming head of the B.C. pesticide control branch.) Foresters, however, say the federal registration system is denying them the use of so many chemical compounds that they no longer have any management options. "All I see," says Bob Jones of the forest ministry's silviculture branch, "is the list diminishing."

> ***"If 2,4-D had to be registered today, I believe it could not pass the standard eight tests for mutations and genetic changes."***
>
> *John Warnock, environmentalist*

Indeed, there are various herbicides available over the counter to homeowners that are not permitted for use in the forest. Moreover, herbicide use in agriculture — which is many times greater than in forestry — is not controlled by a permit system. Bob DeBoo, pest management director of the forest ministry's protection branch, says there's a feeling that foresters are restricted in their use of herbicides far more than farmers. "Foresters are asking 'What's happening here?' There's the farmer spraying to his heart's content, but we can't use it."

Kobylnyk agrees that there's an imbalance, but says: "Effects related to preserving good environmental quality in a farmland area are almost nonexistent. It's monoculture. Sure, there's a few fish and a few quail, but otherwise there's really nothing of significance to damage. You go into a forest situation and it's extremely complicated because there is no such thing as monoculture — at least not now — and there's all sorts of grief you can run into in terms of damage."

IS 2,4-D HARMFUL TO OUR HEALTH?

Running headlong into foresters' perceived need for increased use of herbicides is public opposition to 2,4-D on health grounds. But is 2,4-D really harmful? After seriously studying the topic, some people certainly think 2,4-D is a hazard; others see no problem with it at all.

Perhaps B.C.'s chief critic of 2,4-D use is John Warnock. A political scientist and former pesticide user, in the mid 1970s he became active in challenging the province's use of 2,4-D to kill Eurasian water Milfoil in the Okanagan lakes system. His book about the herbicide, *The Other Face of 2,4-D*, has received, in his words, "a lukewarm reception from all levels of government, but has been well received by public interest groups."

Warnock's considerable research into 2,4-D has led him to conclude that the herbicide is a serious threat to human health. Referring to the fact that 2,4-D originally was registered for use in Canada when standards for approving pesticides were less strict than they are now, Warnock says: "If 2,4-D had to be registered today, I believe it could not pass the standard eight tests for mutagenesis (mutations and genetic changes). Almost all tests, including those done by Dow Chemical Company, show 2,4-D to be teratogenic (causing birth defects). As for carcinogenicity, studies in Sweden conclude that phenoxy herbicides, including 2,4-D, cause cancer in humans."

Another interpretation of the Swedish studies is provided by Dr. Dieter Riedel of Health and Welfare Canada who, in the course of studying 2,4-D's health effects, travelled throughout Europe to review research on workers exposed to pesticides. "A professional pesticide applicator working over a number of years runs some risk of developing cancer and other diseases," Dr. Riedel says, adding: "An occupational exposure to a mixture of chemicals — not just phenoxy acids — may lead to an increase in cancer." But Dr. Riedel notes that the Swedish studies suggest that work-related cancers seems to have declined with increased health-safety awareness.

A third opinion comes from Mike Newton of Oregon State University, a leading institution in vegetation management research. Newton, an occasional advisor to the Ministry of Forests on herbicide use, says the Swedish studies are too inconclusive to be of value, adding: "I can assure you that 2,4-D is a very safe com-

(top) ***Under a special permit, forest ministry silviculturists test the herbicide Roundup on young alder that have taken over a good growing site near Port Renfrew on Vancouver Island.***

(above) ***Preparing to reduce the volume of trees in a new conifer plantation using the "hack and squirt" method, a Crown Zellerbach chemical spacing crew near Vancouver Island's Comox Valley pour out individual containers of the herbicide MSMA.***

pound to use, even under the most hazardous conditions." Newton even says that people under conditions of greatest exposure — workers regularly handling 2,4-D — don't come close to being exposed to any health risk whatsoever.

All the same, concern that 2,4-D may be a health hazard led both Agriculture Canada and the U.S. Environmental Protection Agency in 1980 to order the manufacturers of 2,4-D to conduct a battery of chronic toxicity tests. Asks John Warnock: "Why is 2,4-D still in use if it is under review by the very agencies which decide if it is safe to use?"

But Dr. Len Ritter, a toxicologist with

[redacted]

"I can assure you that 2,4-D is a very safe compound to use, even under the most hazardous conditions." —

Michael Newton, forest ecologist

[redacted]

the health protection branch of Health and Welfare Canada, says it would be "irresponsible" to remove 2,4-D's registration just because it doesn't meet today's standards for approving new pesticides. "There's a fundamental difference between registering a new chemical and allowing the continued registration of an old chemical." Ritter compares the situation to mandatory seat belt legislation, which requires seat belts in new cars but not in old ones. "Right now," he adds, "2,4-D is in the midst of one of the largest reevaluations done on any chemical."

As things stand, the federal officials charged with evaluating and registering pesticides say there is not sufficient evidence of negative side effects to justify withdrawing 2,4-D from use. "With any of the biological sciences," explains Wayne Ormrod, director of the pesticides division of Agriculture Canada, "there is always a subjective interpretation of data. It would be unwise to base a decision on a material as important to the country as 2,4-D is on a select range of studies. On balance, the data does not support a precipitous regulatory action around 2,4-D."

That kind of statement doesn't reassure all of the people who work in B.C.'s forests. The Port Alberni local of the International Woodworkers of America (IWA) takes the position that because "employees are using and handling chemicals which may be extremely dangerous," there should "be no further use of the chemical 2,4-D, or any other herbicides or pesticides, for the use of weed or tree control in the forest industry." Similarly, many of B.C.'s treeplanting and silvicultural workers are becoming increasingly concerned about the potential hazards of working in herbicide-treated areas. And when B.C. residents opposed to 2,4-D on

"Because chemical pesticides over the past 40 years have dominated agriculture and forestry policy, alternatives have not received the attention they deserve." —

Dr. Ross Hall, Canadian Environmental Advisory Council

health grounds try to make their concerns known to the B.C. Environmental Appeal Board, the experience can be frustrating. They face, says John Warnock, "a stacked deck. The board takes the position that 2,4-D is registered by the federal government so it must be safe. What can you say?"

Most of the data used as the basis for registering pesticides in Canada comes from sources outside of Canada and cannot be verified independently. This is a concern raised by McMaster University biochemist Ross Hall in his report for the Canadian Environmental Advisory Council, *A New Approach To Pest Control In Canada*. Hall notes that 115 pesticides (but not 2,4-D) have been registered in Canada partly on the basis of what has now been learned to be falsified data provided by a U.S. chemical testing firm, Industrial Bio-test Laboratories (IBT). "This revelation," says Hall, "left Ottawa authorities wondering how much of the data they had on file could be trusted." And his own study has left Hall questioning, given that there are "unknown risks" attached to pesticide use in general, just whether they should be used at all.

(top) ***Squirting a herbicide into a cut hacked into a tree's cambium layer usually kills the tree.*** *(above)* ***The whole idea is to keep unwanted vegetation from smothering the growth of commercially desirable conifer plantations.***

HERBICIDES AND THE ENVIRONMENT

"I don't want to say that I have no hang-ups about using chemicals," says MacMillan Bloedel's Dave Handley. "But I honestly believe, based on over 20 years of use and study, that the materials we're using and the manner in which we're using them do not constitute a significant hazard to the environment."

Herbicides are applied using one of three techniques: aerial spray from helicopter or fixed wing aircraft; mist blown from either a backpack or a tank truck for roadside applications; the "hack and squirt" or "fell and squirt" methods, in which a small amount of liquid herbicide is directly applied to a cut made in a tree trunk, or to the stump of a felled tree. Each method carries with it precautions for protecting health and the environment, but critics claim these precautions (which they say are not always followed) are often inadequate. Almost everyone agrees that the effects of herbicides on the environment need a lot more study.

"In the area of herbicides," says the forest ministry's Bob DeBoo, "we would like to see some responsible mechanisms to address both efficacy and environmental impact. We don't have that. There has never been a research and development program of any duration for forest herbicide development in Canada."

Adding to this data gap is a lack of follow-up and monitoring of spray programs. "One of our weaknesses," admits DeBoo, "is the follow-up. It's been a little bit scattered." Ron Kobzinik agrees: "I'm really concerned about large environmental areas," he says, "where the misuse of the pesticide could cause all sorts of damage. 2,4-D is potentially hazardous to fish and it hasn't been as well researched in terms of salmonids."

On the other hand, Mike Newton of Oregon State University is confident 2,4-D poses no threat to the environment. Referring to U.S. studies, he says, "2,4-D has been well researched for fish on the west coast; you just can't kill fish with 2,4-D. And the use of herbicides, which permits a return to coniferous forests, actually enriches wildlife habitat. Insecticides may cause damage to wildlife and people, but not herbicides."

But Ross Hall's study of pesticides in Canada, which discusses fungicides, insecticides and herbicides as a group, strikes a very different tone. "There is a lack of fundamental understanding of the environmental effects of toxic chemicals, of which pesticides represents a class. Much more basic research needs to be undertaken."

ARE THERE ALTERNATIVES TO CHEMICALS IN THE FOREST?

Informed opinions vary considerably on whether herbicides really need to be used at all. Forest managers maintain that manual and mechanical treatment of unwanted vegetation are more expensive and less effective than chemicals. The forest ministry's Bob Jones estimates it costs "about three times as much for manual treatment," and that "mechanical means on the coast have not been outstandingly effective." Also, foresters cite lack of experienced work crews for manual treatments, resulting in inefficiency, damage to crop trees and a high accident rate amongst workers.

> ***"If pesticides were not made available for use because of emotional public pressure based on unscientific facts, the forest, the economy and our society would suffer."***
>
> *Association of B.C. Professional Foresters*

"In my program alone we have spent millions of dollars on research on the possibility that herbicides cause damage to the environment," says Mike Newton. "The only time we ran into examples of damage was when we studied the alternatives — mechanical means such as chain saws and bulldozers." Newton leaves no doubt as to where he stands on the herbicide issue. "The work I've done illustrates beyond a shadow of a doubt that getting along without herbicides is much riskier than using them."

But some of Newton's countrymen contradict that view. Says a special U.S. Congressional document on herbicides: "Serious information gaps exist relating to the long-term silvicultural and environmental impact of herbicide use." The report goes on to note that vegetation management decisions too often are based on "the long-standing belief of forestry personnel that herbicides are safe and the most economical and effective method available. Experiences in forest management have demonstrated that alternatives to herbicides for site preparation and release work are viable."

The belief that there are alternatives to chemical herbicides is central to Ross Hall's report. "Chemical pesticides represent only one means to control pests. There are alternatives, but because chemical pesticides over the past 40 years have dominated agriculture and forestry policy, alternatives have not received the attention they deserve."

SUMMING UP: CAN WE AFFORD THE RISK OF USING CHEMICAL HERBICIDES?

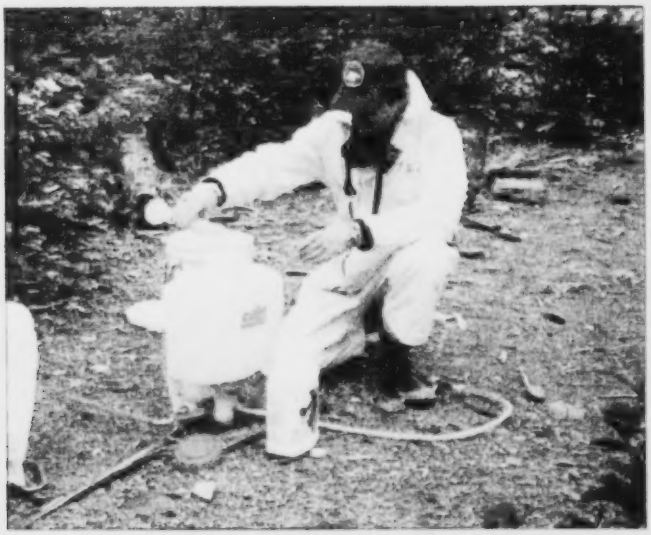
Foresters like the Ministry of Forests' Bob Jones and Western Forest Products' Bill Dumont are ready and willing to work with herbicides to meet their silvicultural objectives. Indeed, some foresters say all British Columbians will benefit as a result. "Given certain improvements," adds Dumont, "like faster reforestation and larger planting stocks, we can reduce our herbicide use significantly, but we'll still need it as a tool." Because he sees no evidence of adverse effects of herbicides, he says "we're prepared to accept the risk." A report by The Association of B.C. Professional Foresters is much more emphatic: "If pesticides were not made available for use because of emotional public pressure based on unscientific facts, the forest, the economy and our society would suffer."

Herbicide users generally have faith in the relative safety of the chemicals they use. MacMillan Bloedel's Dave Handley, for example, throws his support behind the intelligence and expertise of the "tremendous body of dedicated people from four ministries" involved in registering and regulating herbicides. Handley believes they're doing their best "to keep people and the environment safe."

Despite the volume of studies already carried out on herbicides like 2,4-D, commentators like John Warnock and Ross Hall say the risk factor is just too great to justify continued herbicide use in the forests — or anywhere else, including farmlands and rights-of-way. "Chemical pesticides," writes Hall, "although they control effectively many pests, impose an environmental and human health burden. Because that burden cannot be adequately assessed, the present risk/benefit judgements made in order to register a pesticide are invalid." Instead, Hall concludes, people working in the field should be promoting more environmentally compatible alternatives.

Clearly, the great herbicide debate is far from over.

WHY PESTICIDES?



Pesticides, which include herbicides, insecticides and fungicides, have been an integral part of forest management in Canada for nearly forty years. The first aerial spray trials in British Columbia were conducted in 1929 when the aircraft used, a Boeing Flying Boat (BIE model 204), was still being manufactured in this province. Since then, intermittent but important pesticide programs have been administered by the Ministry of Forests and various forest product companies.

In British Columbia, all pesticides used in forestry must be registered under the federal Pest Control Products Act and applied under a certification-permit system administered by the B.C. Ministry of Environment. Both procedures, product registration and application, require intensive review and approval by a number of resource agencies.

Pesticides are required to preserve forests threatened by insects, competing vegetation, and disease. The Ministry of Forests' decision to use a pesticide in a specific instance is made on the basis of need, and only after every alternative approach has been discounted. The Ministry of Forests lists the following situations where pesticide use can be considered:

- To protect seed trees, seed orchards, and cone crops
- To protect forest nursery stock
- To protect high-value planting sites
- To release trees and grazing land from competition from undesirable vegetation
- To protect and preserve high-value trees of aesthetic and historical value
- To prevent the escalation of pest attacks in forests
- To protect rangelands from attacks by insects or disease

HERBICIDES

Forest managers use herbicides to keep unwanted vegetation of many kinds (alder, salmonberry, weeds, etc.) from encroaching on valuable conifer growing sites.

Herbicide use in B.C. is expected to continue to run between ten to twenty thousand hectares annually.

2,4-D A phenoxy acid compound, in common use for domestic, farm and forest brush control. In forestry, 2,4-D amine is applied through hack and squirt; 2,4-D ester is used as an aerial spray. In 1981 about 15,500 kilograms of active ingredient of 2,4-D were applied to 6,200 hectares of B.C.'s 52 million hectares of forestland.

asulam A carbamate compound used in some crop areas and for control of bracken fern in noncrop areas.

MSMA (Glowon) An organic arsenical, extremely toxic to fish, used in small amounts (0.3 gram per cut) for hack and squirt commercial thinning of conifers.

simazine Useful where long residual action is required, it controls broadleaved weeds, grasses, and perennial species starting freshly from seed.

The herbicides listed below are in reasonably common use throughout North America, but are not currently registered for regular use in B.C. forests.

2,4,5-T A phenoxy herbicide formerly used in combination with 2,4-D against hard-to-control species like blackberry. In B.C. its use is restricted to special permit use because of dioxin contamination.

fosamine (Krenite) A carbamate compound brush control agent used in forestry as an aerial spray to control alder, maple and salmonberry. Before its registration was suspended, in 1981 about 35,000 kilograms of Krenite were applied to 6,500 hectares of B.C. forestland.

glyphosate (Roundup) A phosphonated amino acid used experimentally against perennial weeds, broadleaved brush species and grasses.

hexazinone (Velpar) A triazine compound used on noncrop land to control brush, particularly in interior forests.

triclopyr (Garlon) A pyridine acid used to control broadleaved brush such as salal and rhododendron.

INSECTICIDES

Since 1929 the Ministry of Forests has used chemical insecticides 26 times; since 1950, only 12 times. In the past seven years the ministry used insecticides in the service of pest management only twice. In 1982, however, the tussock moth problem in the B.C. interior has led to a pesticide control program involving the use of three separate insecticides.

The following insecticides are registered or are being developed for use in B.C.'s forests.

acephate (Orthene) Nonpersistent, it is registered for use against a wide variety of household pests and is moderately toxic to animals and fish. In forestry it can be used against the spruce budworm, gypsy moth, tent caterpillar, and tussock moth.

Bacillus thuringiensis (Thuricide, Dipel) A bacterial insecticide used mostly against caterpillars, it has no apparent effect on people, fish and wildlife. It can be used against the spruce budworm, cankerworm, gypsy moth, spanworm, and tent caterpillar.

carbaryl (Sevin) Effective against many insects but used sparingly in B.C., it can control the spruce budworm, cankerworm, gypsy moth, sawflies, and tent caterpillar.

chlorpyrifos (Dursban, Lorsban) A compound with a long residual effect, it is used against bark beetles.

diazinon This broad-spectrum insecticide controls a variety of seed and cone pests.

dimethoate For use on a number of insects including scale insects and the spruce budworm.

MSMA (Glowon) Primarily a herbicide, it can be used to control bark beetles.

nuclear polyhedrosis virus (NPV) Still in the experimental stage, this virus can be used to infect populations of spruce budworms and tussock moths.

permethrin (Ambush) Available on an experimental basis for control of a number of forest insect pests.

FUNGICIDES

borax Applied to tree stumps to prevent the spread of one form of root rot (*Fomes annosus*).

zinc sulphate Available on an experimental basis for control of *Fomes annosus*.

The use of pesticides in forestry nurseries is governed by the standards applied to agriculture, not forestry, and compared to forestry the use of pesticides in nurseries is relatively intense. To ensure fast-growing, healthy seedlings, nurseries have at their disposal over half a dozen herbicides, eight or so insecticides and four to six fungicides.

People

The Sopron People

by Gordon Price

Fleeing a totalitarian regime, the two hundred forestry students, thirty faculty and seventy dependents left everything behind for an uncertain future in a land of freedom.

In 1956 the USSR was in the midst of crushing the Hungarian Revolution. On the western border of Hungary, in the small city of Sopron nestled in the foothills of the Alps, almost an entire university — students, professors and their families — had organized to resist the 2,000-tank Soviet invasion.

Since World War II the iron curtain had isolated Hungary from the rest of Europe; the country's traditions and customs had been deliberately suppressed. Moreover, the Hungarian language had no relationship to the languages of its neighbours, not even to the Austrians three miles away.

Sopron University itself was the product of war. Following World War I and the division of the Austro-Hungarian Empire into separate nations, the students and professors of the forestry university in Selmec, which had just become part of newly created Czechoslovakia, migrated to Budapest and then on to Sopron in order to remain within the new borders of Hungary.

In Hungary, as it was throughout Europe, forestry was a profession of great prestige, and the University of Sopron reflected that pride. Students had maintained traditions going back over a century; student clubs, uniforms, songs and ceremonies were part of the everyday life. Almost all of the forestry faculty had themselves been active members of the student clubs. Life at Sopron consequently was tannish, rooted in patriotism and tradition.

The communist regime tried to change all that. Mass meetings replaced banquets, ideology replaced education. "Unreliable" professors were simply replaced. Student clubs were outlawed. "A happy era was buried indeed," recall Oscar Szikla and Laszlo Adamovich, the authors of a book on the Sopron years entitled *Foresters in Exile*. "It seemed so hopeless, so grey, so unnatural, that a great lethargy gripped everyone. One did not trust even old friends."

But a decade of indoctrination had failed to overcome a century of tradition.

The events of 1956 first began as spring breezes. Following the first uprisings against the communist regime in Budapest, the students at Sopron quickly form a revolutionary committee. They arrest the communist officials and take control of the town. With one cannon, they defend the exposed northern access leading to the gates of Sopron.

Soon the harsh, cold reality of winter blows away their hopes. The Soviets invade. The night, of course, is futile. As blood spills in Budapest where the fighting is intense, a meeting is called by the student leaders in a clearing on the slopes of Sopron's forests. After some debate, the inevitable decision is made: they, the professors and their families will flee through the barbed-wire fences and minefields to refuge across the border.

There is little time to pack. Dinners are left on the table; goodbyes are few. But there is hope. The West will surely support the revolution; it will only be a matter of time before all will return.

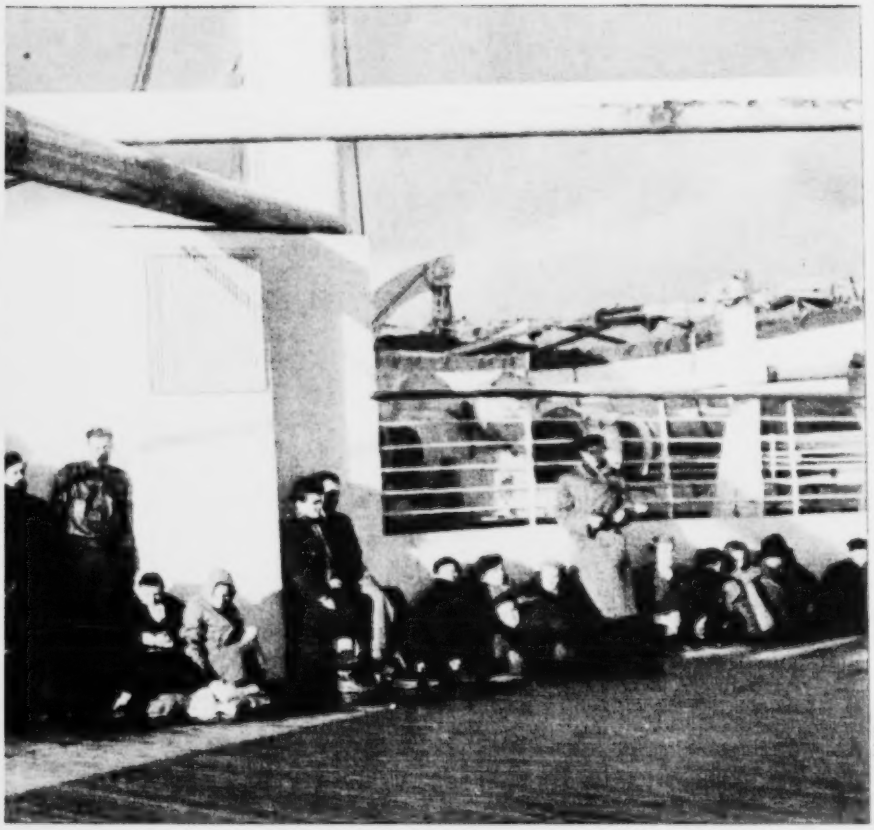
The Western powers, however, decide to maintain their neutrality. To avoid the appearance of partisanship, the Austrians even arrest some of the students carrying small arms. The rest of the Soproners are split among various refugee camps.

Now the situation is desperate: no home, no money, no going back. Knowledge is their only luggage, but there is a determination to remain together, to continue as a school. Sopron in exile. A plea is sent to 30 different countries for a new home. An answer is received, but it means moving to a land on the other side of the world, a land with a completely different language, institutions and culture — a move that would close off, at least for the foreseeable future — and maybe forever — a return home.

That was the situation that faced the students and professors of the University of Sopron when they made the decision to come to British Columbia.

"They were lonely and upset, and wondered if they had done the right thing. They had little or no communication with Canadians because of the language, and so could not really understand how our system worked. It was a time of great trial for them, and there were times when we weren't as sympathetic as we might have been."

That is how Fred McNeil recalls those initial days in 1957 when the Hungarians arrived at a camp in Powell River. McNeil was working for Harold Foley, an owner of the Powell River Company. Foley had been approached by Jack Pickersgill, the Canadian Minister of Immigration, who recognized in the Sopron dilemma a unique opportunity for Canada to gain the skills and knowledge of a complete forestry faculty. But a place was needed for the Soproners to stay until they could be



To reach Canada the Sopron people weathered a cold Atlantic crossing from Liverpool.

transferred to the University of British Columbia. Foley made a decision within an hour to offer Powell River as a temporary home.

The Hungarians arrived in the winter of 1957 after a freezing train trip. Their views of this vast, vacant land restricted to half-minute glimpses as they blew hot air on the windows.

The decision to come to Canada had not been taken enthusiastically. Oscar Sziklai, a Sopron professor still teaching at UBC, recalls with distaste the ostentatious Cadillac from the Canadian embassy that brought officials to meet with them in their Austrian camps. A film from the Powell River Company on their operations was viewed as propaganda. A visit to British Columbia was nominated, led by Sopron's dean Kalman Roller.

It was George Allen, the dean of forestry at UBC, who finally convinced them to come. He was a man they could trust, recalls Sziklai, "a gentleman complete."

The government provided only $4 a day per person for expenses; there were misunderstandings and not a little bitterness. The townsfolk in Powell River were skeptical. It was a measure of the discipline and determination of the Soproners that, according to McNeil: "They dug in and helped themselves. They ran the camp themselves; they did their own cooking and serving — and had money left over. They started off very well by putting on a concert in the community. The Powell River people, after their initial reluctance, really pitched in and helped them."

By fall they were ready to start classes. It had been decided that a separate "Sopron school" would be established at UBC and the students would study and graduate together. But in 1957 UBC was overcrowded; classes had to be held in the evenings. Learning the English language was the major challenge to be overcome, and even summer jobs were hard to find.

The Soproners, though isolated and disoriented, overcame each obstacle and graduated three-quarters of their forestry class within four years. (Some of the students chose different professions.) All, without exception, became Canadian citizens, providing this country with an incalculable gain of specialized knowledge.

The Hungarians had to deal with a host of cultural and linguistic differences, large and small. Frank Pendl, now with the Ministry of Forests, remembers the efficiency of the post office compared to Hungarian standards. Others were surprised at Christmas lights on houses, even the way dinner was served. For the women it was less amusing, although the head of the fourth-year Sopron class was a woman. Female foresters were unheard of in British Columbia, their jobs were restricted to clerical positions. Only two of the female Soproners remain in the forestry profession — Elizabeth Iuhasz, an engineer with the Ministry of Forests engineering branch, and Edith Andocity, a forester with the ministry's inventory branch.

Hungarians had to cope with another aspect of British Columbia that to them was completely alien — the forest. They had come to a country where virgin timber was being harvested under rugged conditions; their experience was with the careful management of relatively small, estate-like holdings. Oscar Sziklai remembers his first impressions. "In Hungary we knew every tree in our forest. My father could detect a single stolen tree from the forest he was overseeing. Suddenly, we were faced with trees as high as a church tower, five times bigger than what we knew. The left-over wood on logged-off areas was beyond our comprehension. In Hungary everything above two inches was picked up."

"It took a few years to understand the forest practices of a pioneering country. We couldn't agree with it, but we could understand it. I would like to believe our influence had some effect on forest operations."

Julius Iuhasz, now head of the Ministry of Forests' Timber Management Branch, also recalls that perspective. "People in Hungary were prepared to dig up stumps in the forest if they could have half of them in return. In B.C. we saw six-foot stumps and logged-over areas with more fibre on it than in our entire forest."

That was 25 years ago. Today, notes Sziklai, whose son is the fifth generation of foresters in the family, "tremendous strides have been made towards intensive forest management, and commitment to tree improvement in B.C. is outstanding, even by world standards."

Speaking at a banquet earlier this year honouring the 25th anniversary of the arrival of the Sopron school in B.C., Dr. Norman McKenzie, a past president of UBC, reflected on the Sopron story. "I have never been able to think of the incident except as one of the greatest immigrant dividends this country has ever had."

How Plants Travel

Although plants are rooted firmly to the ground, they produce progeny that in turn take root in new locations. How do they do it?

To start with, most plants come equipped with disseminules — parts of the plant designed especially for travel.

One type of disseminule often produced by trees is wing-like in design; the higher up it is before it begins to fall, the greater the chance there is of it being blown far and wide by the wind. When a maple tree fruit falls from its tree, its winged membrane causes it to spin on its axis; if there is a favourable wind blowing, it can fly for some distance. Observing this kind of seed in motion gave Leonardo da Vinci the inspiration for making a type of helicopter, a very popular toy in his day.

Disseminules sporting plumes or hairs are far more common than the winged variety. For example, the air and ground near cottonwood trees will be covered with "cotton wool" on a hot, slightly windy day. That's because each small cottonwood seed is covered with fuzzy tufts of fine hairs that slow down its descent, allowing gusts of wind to carry it about.

Dandelions, thistles, cat's ears and oyster plants all produce powder puff fruiting heads. Each fruit has its own group of hairs called a pappus. When the fruits are ripe, the pappuses spread out like parachutes. At the bottom of each parachute is a single-seeded fruit. The parachutes are able to close up in wet weather and open wide when the air is dry. This adaptation enables the seeds to be carried far from the parent plants. Have you noticed how much the stem of a dandelion will grow after the plant has gone to seed? This extra height improves the seeds' chances for good dispersal.

Milkweed seed pods are soft, green and velvety, but as they ripen they become bigger and tougher. Hundreds of brown seeds are packed inside each pod, and each seed has an impressive plume made up of about 500 silky hairs that are hollow and light and coated with wax to keep out water. When the pod is ripe it splits open, and the wind catches the plumed seeds and pulls them out of the pod. The long silky hairs of both the blue clematis and the white clematis (also called traveller's joy) form beautiful plumes as well.

Plant stems blown by the wind is another method of scattering seeds. Either the seed capsules open at the top of the stem, or else the stem seams split when the plant is ripe. Columbine, Easter lily and shooting stars all disperse their seeds in this manner.

The seeds of orchids and rhododendrons are so tiny they are often referred to as dust seeds. Because dust seeds (and spores) have much more surface area compared to their weight, they become long-distance fliers capable of travelling hundreds of miles.

Several different families of plants are known collectively as tumbleweeds. Tumbleweeds die when their seeds ripen, and the weak main stems break off. As the plants are blown about by the wind they scatter their seeds at random.

FOREST HABITAT
by Enid K. Lemon

dandelion puffs
PHOTO DON SMITH

chipmunk with rosehip

The most common disseminules are seeds and fruits, and they travel on the wind, in water, or are carried about by animals and birds. Birds eat the fruits of many plants, including the seeds, and the seeds pass through their digestive systems to be dropped some distance away. Most ripe fruits are brightly coloured and have a sweet taste which, presumably, attracts birds and animals.

Squirrels and chipmunks are well known for storing up seeds and fruits for winter use. As these caches are often forgotten by the animals, the seeds may still be around to germinate in the spring. Also, range cattle pick up cactus pads on their legs and carry them afield to start new cactus colonies.

Many dry fruits have spines, hooks, barbs or bristles that become caught in the fur of passing animals. The burrs from burdock are clusters of dry fruits surrounded by many hooked spines that become firmly attached to man or beast. The seeds then drop out of the burr one at a time. Queen Anne's lace (a name so very descriptive of this dainty flower) produces seeds with strong bristles that adhere to the dry fur of a passing animal; they do not stick to fur that is wet and slippery. The hooked fruits of common cleavers are formed from hardened hairs.

In marshy habitat, many plant seeds fall into the mud and are picked up on the feet of wading birds, geese and ducks. Charles Darwin is reported to have found more than five hundred seeds in the bits of mud on the feet of a wild duck.

Ants are also responsible for the spreading of plant seeds. As they carry the seeds to their hills, they usually drop some en route. Although the ants nibble the seed coat, the seed is still able to germinate. The trillium is one plant whose seeds are dispersed in this way.

Although botanists have known about bird's nest fungus since 1601, it took them another three and a half centuries to understand the seed-like contents of these curious little fungus cups. Thin slices of the supposed seeds were examined under a microscope, and they were found to be capsules containing myriads of microscopic spores. But there was another problem to be solved. The spores were contained within the strong wall of the capsule, so how were they released for distribution? It turns out that the little fungus cups, called splash cups, are just the right size to receive a large raindrop. If a raindrop lands squarely in the centre of the cup, the spore cases are fired by the weight of the raindrop — a considerable force in the world of small things — causing the seed-like spore cases to travel a metre or more.

When Scotch broom seeds are ripe, the two halves of the pod dry and twist spirally, causing the seeds to be thrown for quite a distance. The effectiveness of this procedure is borne out by the enormous amount of broom to be found on Vancouver Island. In 1849, a pioneer named Captain W. Colquhoun Grant settled in the Sooke area, 40 kilometres west of Victoria. On one of his travels he obtained a few broom seeds from the British Consul in the Sandwich Islands. From these treasured seeds three plants grew, and from them have sprung the masses of bushes that are today attractive to the eye and good food for California quail but, in many instances, a detriment to native plants.

Several plants, including violets and spring beauty, actually squeeze their seeds to disperse them. As it ripens, the fruit of the violet splits to form three sections that look like miniature canoes. As the layers of fruit wall dry out in succession, the polished seeds are squeezed out one by one to land as far as two metres from the original plant.

One must not forget that humans have either accidentally or intentionally spread plants all over the world. Certainly many alien plants have been brought to British Columbia, mostly from Europe. After Columbus reached America, European settlers brought with them wheat, cabbage, beets and other crops. Corn, tomatoes, potatoes and squash were some of the crops discovered here that found their way back to Europe. Given the extensive amount of travel of people and animals all over the world, it is inevitable that plant seeds will continue to cling to the clothing of travellers or the hides of animals, bringing more interesting plants to British Columbia.

swallowtail butterfly on glacier lilies

Easter lily

cotton grass

Province of British Columbia
Ministry of Forests
HONOURABLE TOM WATERLAND, MINISTER

Western White Pine

(Pinus monticola)

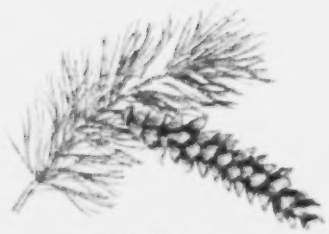
Ponderosa Pine

(Pinus ponderosa)

It was once calculated that every American handled pinewood about 2,300 times a year. B.C.'s western white pine and ponderosa pine are two of this most useful family of trees, which have provided North America with everything from ships to matchsticks. Because of the excellent working qualities of its wood, western white pine is called the "aristocrat" of our native trees. Though first identified by David Douglas on Mt. St. Helens in 1825, it is more abundant in the southern interior; it also occurs on Vancouver Island and the adjacent mainland. Western white pine attains a diameter of about one metre (2-3 feet) and a height of 40 metres or more (125 feet). Ponderosa is a name suggesting something large and heavy - yet this pine, also named by David Douglas, is considered one of the more beautiful of all pines. Occurring only in the dry parts of the southern interior in park-like stands, the tree has an especially bright foliage and a distinctive orange bark of massive, scale-like ridges. Diameters of one metre (2-3 feet) and heights of up to 33 metres (100 feet) are common. Both pines live up to 500 years.

Western White Pine

Ponderosa Pine



Western White Pine

Ponderosa Pine